Business Continues Its Upward Swing

CARLOADINGS exceed 807,000 a week. Steel production hits 75 per cent. Electric power consumption is at an all-time high. Railroad earnings make vast expenditures for improvements certain. Bank clearances and all other indices show steady expansion. In fact, it seems sure that on the basis of operations for the past nine months, business done in the United States this year will approximate the total volume of 1929. At least, the paper industry will go over the top.

In 1929, the total output of the paper industry was 11,200,000 tons. For 1936, projecting the gain for the first nine months, to December 31, it appears that the paper industry tonnage will approximate 11,500,000 tons.

This is an all-time tonnage high. And the paper trade is generally unconscious of the fact that the tightest demand-to-supply situation has developed, the like of which we have not seen since 1920.

For instance, how many manufacturers, merchants or consumers of paper products understand that there was a sheer upturn in demand in 1935 of one million tons of paper products over the output of 1934 and every pound went into immediate consumption?

How many of them know that in 1936, the continued persistent and insistent demand for paper products will net another leap of 1,000,000 tons over 1935?

How many know that the demand for pulp from which to supply the paper demand for 1937, is sold out to-day and that every available ton of domestic and foreign pulp production needed, is contracted for and "more wanted" at this date—October 1st, 1936?

Certainly, they do not know these facts. For if these facts were generally known, as they will be, there would be, as there will be, a repetition of former rushes to purchase, which we have seen before. History repeats itself, and in the paper industry, the repetition is not far off.

A few wise buyers already are endeavoring to cover their next year's needs. They have been doing it in other lines of merchandise.

This past week, we are advised that certain large consumers had their purchasing departments sound out the possibility of covering their paper requirements on to-day's price-level for all of next year, and when the mill representatives rejected the offer, because they feared they could not cover their raw materials and other costs, the prospective purchaser offered to buy the necessary raw materials now and furnish the funds calculated to insure coverage of to-day's costs for next year's tonnage. Failing in that, they proposed a cost-plus basis. That's wise buying.

Merchant stocks have never been lower than during the third quarter of this year, but a change in sentiment is now apparent, for instead of running stocks down to increase cash in the bank at the close of the year, merchants believe it will be much wiser to put their bank funds into merchandise, particularly paper products, and thus avoid taxation, and at the same time, own their paper at prices lower than they can buy it during the next eighteen months.

Consumers have been showing no interest in buying other than on hand-to-mouth basis. They have been lulled into the belief that they can still buy all

the paper they require for delivery at their option at their own price.

This is all contrary to fact.

Slowly, but surely, the evidence is becoming manifest that more and more buyers are waking up to the fact that the depression is over and that the great tide of returning business volume, held in artificial check for some five long years, is coming in, and nothing—not even the uncertainty of a national election in a critical year—can stop it.

"And It Could Have Been Prevented"

THIS quotation, which is the caption for the first month of the National Safety Council's 1937 Calendar, is a sad, oft-repeated phrase.

Although the operation of machinery has become reasonably safe—as far as the machinery itself is concerned—the human element still writes chapter after chapter in its history of accidents and the loss of life. That is why so much is said about "safety education." Books have been written on the subject; the leading periodicals are constantly publishing articles and presenting graphic illustrations warning the public against common hazards; radio programs bring the safety message right into the home, and yet thousands of people daily go about carelessly exposing themselves and others to danger.

The entire nation was shocked into a realization of the results of carelessness recently when an explosion which occurred in the locker room of a midwestern university claimed the lives of two members of the football team. Gasoline was used by the players to remove adhesive tape from ankle bandages. . . . the room was heated with an ordinary stove . . . anyone might have foreseen the tragic circumstances that followed.

Although rigid safety supervision is maintained in the laboratories of our colleges and universities, it is clear that there has been a lack of consideration for the more common hazards, such as that which caused the accident just mentioned.

With the progress of industry, safety has become a science—it has advanced far beyond a mere understanding of acknowledged mechanical hazards. The director of safety must give more and more study to the failure of the human element—he must draw upon a broad knowledge of many subjects, including psychology and psychiatry.

These facts point the way toward a greater need for safety promotion in our educational institutions. A course in safety engineering might be added to the curriculums of the larger universities, and every college, large or small, should institute a periodical safety survey to ascertain whether its student body is being subjected to unnecessary hazards. Remedial measures may necessitate the spending of money, but if only one human life is saved, what a contrast with the thought—"And It Could Have Been Prevented."

The Once Over

MAINTENANCE work in a pulp and paper mill may be likened to the old adage about the theatre — "the show must go on." Actors and actresses are imbued with the thought that no disrupting influence should cause a theatrical performance to fail in its rendition. Maintenance men should be imbued with the thought that plant operation must continue throughout the twenty-four hours of every working day with greatest possible efficiency.

There should not be any shutdowns in a mill caused by breakdowns that might have been prevented had sufficient foresight been used. Such shutdowns, to say the least, are not only annoying but also are expensive. They disrupt the operating schedule and, in addition, allow production costs to go on at the same time.

It is the wise maintenance man who foresees a possible breakdown in equipment and prevents the break from occurring through timely action.

In some cases, frequent inspection would be necessary to observe such situations. In other cases, infrequent check-up is all that is required.

The critical points quite commonly receive the attention they demand. The less critical points, however, are apt to be overlooked or forgotten.

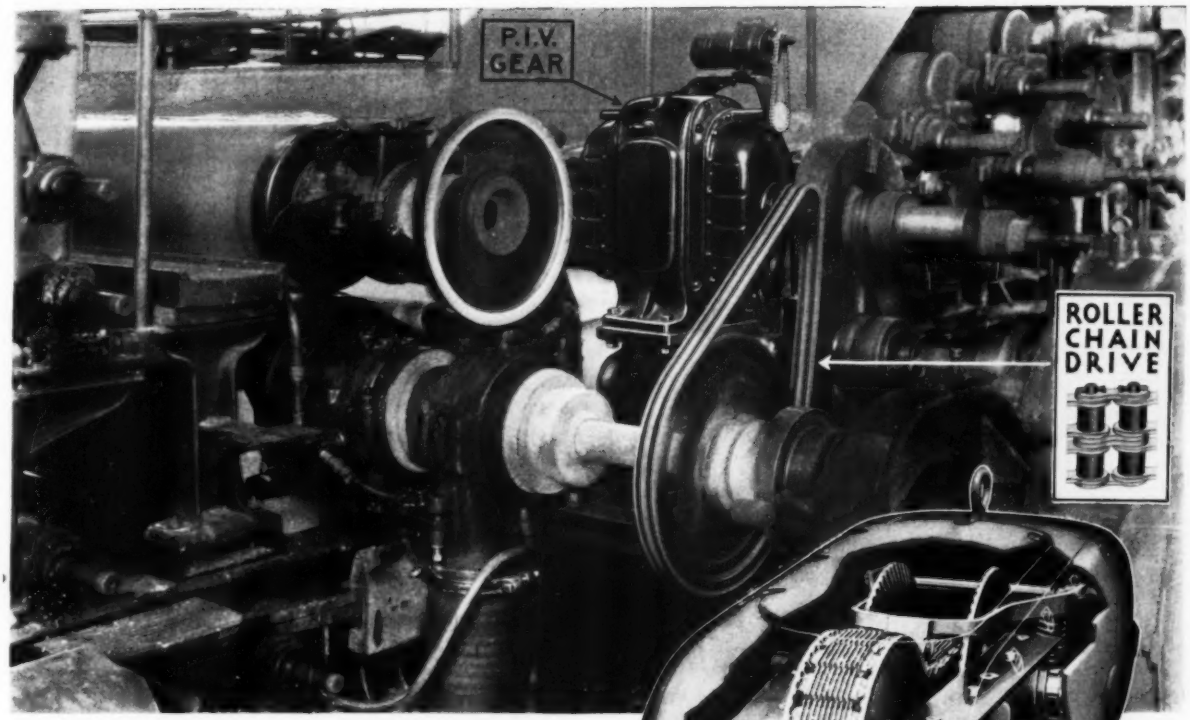
It may be that in your plans for work to be done during the summer months you included a number of jobs that only have to be done infrequently and yet should be done during the open season. Have you been able to get them all completed by this time, or are some of them yet undone?

Maybe a check-up of your summer program of activity at this time would not be amiss. It might reveal some job that has been overlooked.

If the check-up is made promptly, there would still be the opportunity in most parts of the country to get any unfinished work of ordinary character out of the way before winter sets in.

The suggestion, likewise, might be made to make a thorough inspection of all buildings and mill grounds. Any condition that was found to need attention could thus be taken care of opportunely.

By giving everything within and without the mill the "once over" now you may save some grief when the weather is inclement and likewise may be the means of saving some money for your company.



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Our Last Chance to Kill the Octopus

WILLIAM SIBLEY

OUR quadrennial presidential fights are combats of wisdom and necessity—if only because they force a large percentage of Americans to make a closer study of our Government and our political systems. They bring home to us the realization that we are living in a perpetual war of propaganda—a war that constantly becomes more and more intense; more and more confusing; more and more costly. But better still they also are revealing of governmental trends; of the growth of barnacles on the ship of state.

. . . Did you ever read Victor Hugo's *Toilers of the Sea?* If you haven't, I heartily recommend it. If you have, read again Hugo's relation of Gilliatt's encounter with an octopus in a cavern off the coast of Sark. In addition to having all the breath-taking word pictures of Poe, the blood-curdling thoughts of Doyle, and the accuracy of an ichthyological encyclopedia, that chapter provides a beautifully accurate analogy of our present-day government-industry relations.

After describing this sea-monster's nature and action and relating how the devil fish suddenly opens its eight radii or antennae, Hugo says: "the devil fish lassoes its victim. It winds around the sufferer, covering and entangling him in its long folds. Underneath, it is yellow; above, a solid earthy hue. Its most horrible characteristic is its softness. Its folds strangle and its contacts paralyze. It is a monstrous embodiment of a disease. It adheres closely and cannot be torn away—a fact which is due to its power of exhausting air. . . . It is with the sucking apparatus that it attacks. The victim is oppressed by a vacuum drawing at numberless points; it is not a clawing but an indescribable scarification. A tearing of the flesh is terrible, but less terrible than a sucking of the blood. The talons of a wild beast enter your flesh, but with the cephalopod it is you who enter the creature. The tiger can only devour you, but with the devil fish you feel yourself emptied into this horrible pouch which is the monster itself."

How like a devil fish is our present-day Government. Unlike the tiger of civil war or the panther of revolution, it does not tear the flesh to devour. Rather, like the devil fish, it fixes its tax and money-sucking tentacles first on one arm of industry and then on another, with the result that struggle as we may, we feel ourselves being slowly but surely emptied into the hulk of a soft yet all powerful agency.

Time was when our Government was not thus. That time was when the income of the Government, received in the form of taxes, revenues, duties, etc., paid its entire cost. But with the increase in the number of bureaus, departments, and so-called "administrations," the rapidity of which addition is without precedent since 1932, we not only have a governmental cost far exceeding its income, but the mounting of a debt so huge as to be beyond repayment save by either inflation (repudiation) or another war. . . .and with devil fish actions as a result. Orpheus, Homer, Hesiod imagined only the Chimera. God in His ways, which are beyond human understanding, created the devil fish. Hamilton, Franklin, Jefferson created only the Constitution. The Socialists, whose ways are beyond human understanding, created the governmental devil fish. No visible claw, talon, fin, spine, beak, hoof, jaw, or tooth characterize the governmental octopus. Only money-sucking, profit-absorbing vacuum cups hidden under the yellow bureaucratic arms created by men of socialistic minds. And therein lies the terror of the possibility of a continuation of the present administration. Therein lies the threat to the very life of industry if this rapid decline toward Socialism is not stemmed next November third, and we start on the job of severing from the governmental octopus one after another of its bureaucratic arms.

Already we are crippled, hampered and tied by governmental interference. The eighth wonder of the world is how industry can, even now, move at all through the legislative labyrinth that exists today. As a single example: the ordinary railroad box car has exactly 267 chances of violating a law, while a locomotive has as many more chances to break existing laws as it is more complicated. If every law designed to regulate the railroads were to be enforced, our railroads would immediately become an enigma, since they could neither lawfully run nor legally stand still.

The present administration, in so many words, has served notice that during the next four years it will extend its "control" not only of the railroads but public utilities of all kinds, industries of all classifications, retail trade of all divisions, agriculture and labor. On November third, next, we have our last chance to kill this octopus. If we fail to kill it then and on that date, our governmental devil fish will so enlarge the number and length of its antennae and so increase the number of its money-sucking tentacles that it will be beyond destruction. It will be for us, rather, to be destroyed.

During the next thirty days our governmental octopus will expel an unprecedented amount of inky-black propaganda. Let us not be confused by this blinding ink. The octopus is there, eager to grow to maturity by 1940. November third is our last chance to kill it.

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THE PAPER INDUSTRY
A MONTHLY EDUCATIONAL JOURNAL

The Menace of Government Ownership of Railroads

J. E. BRYAN, Traffic Manager
Wisconsin Paper & Pulp Manufacturers' Traffic Association

WHEN Congress closed last July, the so-called Wheeler Bill died. The purpose of this bill was to permit the United States to take "possession, control and ownership of certain property of carriers," and "for other purposes."

The fact that this bill was not acted upon at the last Congress should not lull the public into a sense of security. Undoubtedly it will be renewed in the next Congress should the present administration be successful at the polls this coming November, and there is a fair chance that it will pass. It may even be passed should there be a change in administration, because those back of the movement for government ownership are determined to force the issue. The tremendous political power thus created would attract politicians to this enormous "pork barrel" as honey attracts flies, and the few patriotic statesmen that remain to protect John Henry Taxpayer will be so outnumbered that their efforts will be as impotent as the cry of lost souls in a wilderness.

For many reasons, it is vitally important to the paper industry of the United States that the railroads continue to be owned and operated as private enterprises. Although the industry ranks seventh largest in the country, as a whole, if considered from the standpoint of transportation used (for which purpose are included pulp, paper, boards and articles manufactured therefrom) it will rank much higher. In fact, the paper industry is one of the largest contributors to transportation in this country. One reason for this is that it requires the movement of from two to ten cars of raw material to produce one carload of finished paper. Supplementing this are the vast amount of tonnage moving in partially completed form between mills and the reshipping of products from distributing centers. This sum total runs into large figures of tonnage attractive to the carriers and it is much sought after by them. Add to all this the fact that the industry supports many fair-sized cities and villages, thereby creating more tonnage through the transporting of products used in the everyday life of these mill workers, and you have a fair picture of the far-reaching effect of the paper industry on the affairs of the nation.

By far the bulk of the paper produced is made from wood fibers, and the mills have been built near the source of supply for their largest item of raw material —pulpwood. As each year goes by, it is found necessary to go farther afield to obtain wood, and rail transportation is necessary. Coal, pulp, lime, sulphur, clay, alum and numerous other materials and supplies must be delivered on time, and a regular schedule of service is essential. Competition between carriers insures the prompt and efficient movement of all of this and permits economic operation of the plants. Remove that competition by turning the railroads over to the Government and the benefit of services now accepted as a matter of course both by the carrier and the shipper is lost. Parcel post methods will prevail, and a ship-

ment that is not ready to move at a stated time will be held over until the next day, or such other time as suits an independent agency whose services are not influenced by competition.

One very essential factor in the successful operation of a paper mill is the ability to serve a given market, from some more or less remote plant, in competition with other mills more advantageously located. Time is an important factor and one difficult to overcome from a point back in the hinterland on an obscure branch of railroad. Under the present system of railroading, these difficulties are overcome to a large extent and the mill far removed is able to meet the service of his competitors located close to the desired market. There is grave doubt that government operation of railroads would preserve such service as this.

The old adage, "Competition is the life of trade," may be applied to railroads and the competition between railroads. Rail carriers in each territory have, and do, compete with carriers in other territories in the establishment of rates on finished products that will permit selling those products in territories long distances from the point of manufacture. The carriers of the South, finding that the building of paper mills would be creative of tonnage lost to them by the disappearance of the lumber industry, have fostered and encouraged the manufacture of paper by the publication of freight rates which permit the southern paper mills to compete in northern and eastern markets. The rails serving the Pacific Coast territory have placed the mills there in competition with eastern and middle-western mills through the medium of rates and service. Eastern and middle-western roads have not been idle and they too have entered into the spirit of competition by rendering the highest type of service at rates made for the purpose of keeping the mills they serve in the markets North, South, East and West. These statements should not be construed as meaning that manufacturers are satisfied with the level of freight rates published. That is far from true. But they do mean that because of carrier competition there has grown up in this country, and in Canada, a rather closely related freight rate structure based largely on the equalization of each section with the other. And this also holds good within the several territories where the equalization of freight rates and the competition between carriers is much more pronounced.

Under government ownership of railroads, all competition between carriers would vanish. Service would be a mere word. The incentive to equalize rates would be gone. Each mill would be required to pay according to the mileage used to a given market. A system of rates somewhat similar to our parcel post scheme would be made operative eventually. This would affect the paper industry in much the same way that it has the printing of periodicals having a wide distribution. In other words, it would concentrate the manufacture in or near the large consuming points. That would mean the destruction of millions of dollars worth of properties; the wiping out of villages; and a migration of the population of substantial cities by reducing them to mere villages with the accompanying loss of property values represented by thousands of homes throughout the country. Such a program is not at all impossible, when, as previously stated, the paper manufacturer must seek farther afield for his supply of pulpwood. That alone lends itself to the concentration of manufacturing plants nearer the markets. When wood was plentiful in the territories in which mills were located, it was to the advantage of the manufacturer to be close to the source of supply. With that advantage gone and with freight rates on products placed on a mileage or zone basis, the natural thing to do is to move the plant closer to the market of consumption. Don't say "It cannot happen to us." Just remember what happened to the newsprint industry of the United States after the passage of reciprocal duty laws under the Taft Administration when the duty was removed from newsprint paper. By comparison, the hand-shaking, baby-kissing politician of years ago was a piker and has been succeeded by those who slip your wallet from your pocket, in the form of taxes, and make you like it.

In many foreign countries there has been and now is government ownership and operation of railroads, and, speaking generally, it is done at a loss which is made up through taxation. Selecting a country close at hand, let us see what has been done in Canada by both government owned and privately owned railroads. In Canada, there are two systems of railroads spanning the country from coast to coast. One is owned and operated by the Canadian government while the other is privately owned and operated. Records show that the former, the Canadian National, has never earned enough to pay interest on the money borrowed to build the railroad. Its annual deficit, on the average, has been over sixty million dollars. On the other hand, the Canadian Pacific has been a profitable operation for its owners. After paying interest and heavy taxes it has paid, over a period of fifty-odd years, approximately seven hundred and fifty million dollars in dividends.

These two systems serve much the same territory, have the same basic scales of freight and passenger rates and pay the same scale of wages. Official investigation has disclosed that the sole difference is that one is under political control and the other under private control. The politically controlled railroad in Canada, according to official reports in that country, has not conformed its facilities and service to the real needs of the people, but has sought popular, rather than wise operation. In other words, the government owned and operated road is the plaything of politicians with the result that the taxpayer must take care of its enormous deficit which, of course, is just so much added transportation cost to the nation.

The experience in this country during federal control should convince any "Doubting Thomas" of the unsoundness, from the public's view, of government ownership and operation. With as much business,—passenger and freight—that could possibly be handled, and at increased rates, the government control and operation of the railroads of the United States cost the taxpayers of this country approximately one billion, six hundred million dollars to take care of the deficit resulting from twenty months of extravagant, politically controlled mismanagement. What the flagrant mismanagement, under government control, cost the shipper because of delayed transportation service could not possibly be estimated and would run into terrific figures. Fitzgerald Hall, President of the Nashville,

Chattanooga, and St. Louis Railway, in an address before the Traffic Club of Chicago last January, after stressing these, and other points, summarizes the effect of government ownership in the following language:

> "While no man can foresee the future, certainly, resorting to the 'lamp of experience,' we may, with some degree of certainty, forecast the probable results, and some of them are these:
>
> "(1) The politicians would not choose the best qualified railroad expert in America to be in supreme charge of railroad operations, but would choose one of their own number, namely, a politician, for this important technical task.
>
> "(2) The personnel of the governmentally operated organization would not be based on either civil service or experience, but on party loyalty and local political influence.
>
> "(3) We know that the federal government for years has constructed post offices in size, cost and appointments disproportionate to the needs of most local communities. Congressmen and Senators have generally, as we all know, advocated as great an expenditure for such purposes as possible and the basis for that advocacy has not been essential public service, but the effort to be popular by 'bringing home the bacon' to those upon whose suffrage their continuation in public office depends. We know that the Federal Government for years has wasted enormous sums in surveying, dredging and canalizing small creeks and rivers—but diligent politicians conforming to 'pork barrel' policies, have sought to spend the people's money, not wisely, but as much as each could get for his own political bailiwick.
>
> "In exactly the same way, we naturally foresee the building of terminals, depots, and lines, based upon political and not economic considerations. In the same way, endeavoring to pander to local political influences, the centralized political powers at Washington would operate trains and render service based on anything but business and economic considerations."

Not alone would there be a cessation of competition between railroads, if owned by the Government, but it would be but a matter of a short time when all other forms of transportation would be under government ownership and operation. We now have a government owned barge line on the Mississippi and Warrior Rivers and if there is any doubt about the cost to the public for the operation of this so-called experimental project, figures are readily available to those who care to study them. The barge line had no expensive right of way to purchase and maintain and it pays no taxes; yet it has been operating at a loss, which loss is paid for out of your taxes. And what about other public utilities, as well as private enterprises,—the paper industry for example. None will be safe eventually and communism will run rampant over the land.

It will avail us but little to meet in our clubs and associations and adopt resolutions. When passed on to the "pork barrel" politician they are like water on a duck's back. Form letters are also useless. Every Senator, every Representative, every Congressman, must have brought home to him, in no uncertain way, that there is one piece of legislation which the people as a whole do not want on the statute books of the nation. The voter must be informed of the viciousness of this proposed legislation so that he may intelligently place his views before those who represent him in Congress.

While it is clear that the paper industry of this country has a deep interest in this vital question, yet it is one which should have the attention of every citizen because it is every true citizen's problem. The mark of socialism is plainly to be seen and that mark must be erased by an overwhelming defeat of any proposal for government ownership of railroads, whether it be the so-called Wheeler bill or any substitute for it. The current crop of candidates should be required to state their position with regard to public ownership and Mr. Voter should be governed accordingly at the November polls.

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Wire Cloth Guards for the Paper Mill

W. F. Schaphorst, M. E.

IT is commendable practice, for the sake of safety, to place guards around dangerous moving machinery—motors, belts, gears, chains, etc. In many instances guards are required by law. Guards made of high grade wire cloth have these advantages:

1—They are more transparent than other guards. That is, all of the details of the guarded machine can be "seen" without difficulty.

2—Wire guards do not hinder or deflect air currents, which is important in the case of electric motors that are likely to heat where ventilation is poor.

3—Wire guards can be made strong enough for any guarding purpose.

4—They are light in weight, hence can be removed and handled without difficulty.

5—They are easily made. The fact that wire cloth can be bent to almost any desired shape is important. Thus for some enclosures a single joint often suffices.

6—Stiff wire cloth is self-supporting and seldom requires additional or intricate frame work.

An easy and excellent way in which to make wire guards for almost any purpose is to make the frame work out of angle iron and the sides out of wire cloth of suitable mesh.

First make the frame. Angle iron is not easily bent without cutting out portions of the flange. That is, cut out some V's from the inner flange where the bend is to be made. If the bend is to be 90 degrees, cut out a square V. If the bend is to be 45 deg. cut out a 45-degree V, and so on. In other words, cut out a V whose angle is equal to the bend wanted.

After the frame is formed, put in the wire cloth or screen. The quickest way to fasten the wire in place is via the welding torch. The same torch may be usefully employed for welding the frame work together before proceeding with the wire. Simply "spot weld" the wire terminals in place on the inner flange of the frame. If no welding outfit is available the wire may be either riveted or bolted in place. Punch holes through the inner flange at the wire terminals and then rivet or bolt. When carefully made entirely of metal, a guard should last indefinitely.

The Physicist and Papermaking Problems

GEORGE C. MUNRO
Champion Paper & Fibre Company

IN a sense, research and development in the paper industry are as old as the industry itself. The practical papermaker in meeting his practical, day-in and day-out problems gave us nearly all the inventions and discoveries in papermaking which we had until a comparatively short time ago. Such monumental developments as the Hollander beater and the Fourdrinier machine illustrate the quality and permanence of his developments. A large proportion of the equipment and processes in use in the industry remain in principle exactly as developed by the practical papermaker.

If this is so, we may ask "Why, then, is it necessary or desirable for a company to maintain a group of well-trained technical men devoted exclusively to research and development?" First, there is the matter of time. As papermaking became more and more competitive, with the consequent increase in speed and quality, and as the demand grew for a product built to fit more specialized uses, the papermaker had less and less time to devote to improvements and new developments. Furthermore, the demand for speed in developments and improvements increased with competition. Perhaps an obvious solution of this problem would have been to release the more original of the practical men from the routine of papermaking and to allow them to devote their full time to further developments. While the course of events has not followed this plan, its merit is not to be passed over lightly.

A second answer to this question forms about the inability of the purely practical man to bridge the gap between qualitative and quantitative information. The long-range outlook of every efficient production executive in the industry must include the belief that in time each of the larger papermaking variables can and must be brought under control. And control means the ability to quantitatively determine and maintain the product desired. It can no longer be said that it is sufficient for a machine or a process to work. It must work accurately, efficiently and uniformly to meet the demands of a modern industry. It is here that the technical man should offer the first marked advance over the practical man in developments.

The third, and by far the most potent answer to this question lies in the matter of approach. The true technical man forms his approach around one simple assumption: "Nature is governed by certain simple, universal laws, which once determined, allow nature to be controlled." This simple outlook on nature may be entirely false. Whether it be true or false need not concern us. It is a simple matter of record that the technical man working on this basis in every industry which has employed him over an extended period has been able to show marked advances in quality and marked decreases in production costs. It is more than a coincidence that those companies, both in and out of the paper industry, which have consistently given most serious consideration to research and development have most consistently made profits. This is not true beyond some exception. Fine companies with fine research organizations have failed to make profits. Many men and many factors contribute to a complex industrial organization and factors often beyond the control of the organization determine its success or failure. All that need be considered is that industrial research has in the aggregate paid good dividends.

Paper Making and Its Machinery

The improvement of old processes and the development of new ones involve two phases of work which are at times closely related and at other times almost completely distinct. There are, on the one hand, the purely *papermaking problems,* and on the other, those problems in *engineering design* which put papermaking developments into practice. The mechanical and the electrical engineer were introduced to the industry in connection largely with the machinery of papermaking. The chemist, the chemical engineer, and very recently, the physicist, have come to the industry largely due to demands from the purely papermaking problems.

It is strange that the physicist was so late in coming—strange because papermaking involves so much physics. This seems to be entirely the fault of the physicist. While chemistry spread rapidly from the scientific laboratory to the industrial plant, the physicist seemed satisfied to leave the practical applications of his science in the hands of the respective branches of engineering which grew up for this purpose. This might have gone on indefinitely in the paper industry had there not developed a sudden industrial demand for photo-electrical and optical instruments. No branch of engineering existed to meet this demand. Either such a branch of engineering had to be developed or the physicist himself must turn industrialist, which he did. It seems certain that he will be with us from now on and not with his efforts confined to the small field by which he entered but spread over the entire papermaking field. The well-trained physicist with a strong background in chemistry seems ideally qualified to handle the papermaking problems of the future.

Traditionally, the science of physics has been divided into the sciences of mechanics, hydraulics and pneumatics, heat, electricity, optics, and atomic and molecular structure. With the exception of the purely chemical problems, these divisions are large enough to cover nearly all the technical problems of a paper mill. To these branches may be added a further branch called instrumentation which will cover the physical testing of paper and the automatic control of paper-

making processes. Instrumentation is really not a branch at all in the sense of the others, but is a combination from those branches in order to solve a particular class of problems—those problems involving the control of papermaking variables. We will use this field as an example of the role of the physicist in the paper industry, since it is probable that nowhere else can he better illustrate his value in making an immediate profit return for the investment he represents.

Instrumentation

In developing control over papermaking processes, it is very important to distinguish between two general types of processes which exist in production: *continuous processes* and *batch processes.* Again, it is at times difficult to draw a sharp line between these two. Nevertheless, we recognize such processes as washing, bleaching, papermaking from the chests to the reels, jordaning, coating, supercalendering and cutting as continuous processes, while cooking, beating (in large part), color preparation and color mixing are batch processes. The important distinction between these two classes from the standpoint of instrumentation is that frequent tests on representative samples are perfectly satisfactory for the control of most batch processes (excluding, of course, such matters as temperature control in cooking) but nothing short of fully continuous and automatic determination and control of the variables in continuous processes can be trusted to give a product uniform in quality day in and day out.

In every problem of instrumentation, it is necessary to find variables closely related to one another and a method of measuring a first variable and of controlling a second variable from the first. For example, in the design of a consistency regulator it is necessary to design a reliable means for determining consistency, to use a dependable scheme for metering additional water, and to develop a means by which the measurement of consistency controls the flow of additional water to the stock. We must first be able to measure a variable before we can hope to control it. It would show a complete ignorance of the complexity of papermaking problems to believe that the best possible scheme along these lines would cure all consistency problems and eliminate consistency as a variable—but it would help enormously. To cite a further example, that of moisture control on a paper machine, here again we must have a controlling and a controlled variable. Since moisture cannot be measured by direct means, the effort on all moisture controllers has been to find some variable which can be measured continuously and whose values will correspond in a simple way with the moisture of the sheet. Having found such a new variable, the problem then resolves itself usually into a method by which the surface temperatures of the dryer drums may be controlled from this variable and, hence, indirectly by moisture. Such a simple process well designed should give uniformity in moisture within close commercial limits.

Most of the operating men with whom the author is in contact realize how little representative an inspector's sheet taken from any one roll of paper may be of that roll. Not so many realize the fundamental difficulties in the way of getting around this objection. To illustrate: No papermaker would consider using the Mullen test as the controlling variable of an automatic controller, even though someone were clever enough to make this possible, simply because so much paper would be ruined in the process. Yet if the demand were sufficient, it may well be possible that the Mullen of a sheet could be controlled automatically, but the method would of necessity be an indirect one.

Certain other problems present such fundamental difficulties that they appear hopeless at present from an automatic control standpoint. Among these, we must certainly count the control of color, or, as we say, of shade. At least three independent variables are required for the specification of color in quantitative form. One of these corresponds roughly to what we now know as brightness, another to what we now call shade or hue, and still another to what we call depth or intensity of color. With these controlling variables, we would seemingly need three controlled variables—and, to make a bad situation worse, it is very improbable that each of three controlled variables could be found which would in turn depend on only one of the controlling variables. In marked contrast to this is the situation for the control of color in batch processes. Very good automatic, photoelectric spectrophotometers are now available commercially, for those who have the price which is high. These could serve admirably for the measurement of color. The control of color is somewhat more involved but available to all who will spend the time and effort necessary to acquire it.

We must not forget that papermaking is at present an art and not a science. It is a matter of common experience in the industry that what will cure a difficulty at one time may aggravate it at the next. Papermaking will be a science, if ever, when this is no longer true—and to bring this about, papermaking variables must be brought under control. And certainly one inviting approach to this goal lies in the careful, quantitative study of those relations which the practical man has through long experience come to accept as true.

In batch processes, tests made on one sample may be legitimately taken as representative of that batch provided the sample is properly chosen. One measure of color taken from a color agitator may be much more representative of that larger quantity than one sheet taken from a roll of paper. One intelligent inspector or tester may in this way accurately control batch operations and processes while the same technique applied to continuous processes at best is but a makeshift.

In spite of all this, in looking over our lineup of possible physical tests, we see only a few continuous, automatic controllers on our continuous processes and perhaps still fewer "batch" instruments on batch processes. The possibilities outlined above are a dream of the future; not an actuality of the present. Making this dream come true seems the best possible way for the physicist to demonstrate in the immediate future his possibilities as a profit-maker in the paper industry.

Papermaking Fundamentals

In order not to leave the impression that physics is all instrumentation, consider some of the larger possibilities for the physicist in relation to papermaking.

The design of papermaking machinery remains largely a rule-of-thumb process. Certain papermaking

quantities are known well enough qualitatively so that these combined with machine design, as the mechanical engineer knows it, serve as a guide to the design of a new machine. But by and large, the rule has been that the design which has been found to work on the old machine will be followed as closely as possible on the new machine. Only an enormous amount of fundamental research can change this picture.

To many men seeing a paper mill for the first time it comes as a complete surprise that such huge, massive machinery is used to produce such a thin web of material. The same men often are impressed by the amount of energy that is expended to do so little work. These factors must continue to surprise us and to impress us until such a time as they are no longer true. The start toward this objective must begin with fundamental research and continue to development which puts research results into common practice.

Certain very striking results of fundamental research have already appeared. We now have a start at least toward the understanding of the complex relationship of cellulose to water in papermaking. We now have at least some good evidence that the importance of water as a papermaking material is far greater than its abundance and cheapness alone would insure. We now have some good results on the behavior of papers under varying moisture and humidity conditions. The outlines of an optical theory for paper have been drawn.

In other cases, not even a start seems to have been made to obtain results which can be used as designing principles. It is only within the past few years that drying has moved out of this class and even there much remains to be done. The phenomena which determine the surface of a sheet seem to be very little known. Hydration and freeness seem still to be among the intangibles. One master stroke on any one of these would lead to enormous new possibilities.

The Importance of A Good Color Man

J. R. ROBERTS
E. I. du Pont de Nemours & Co., Inc.

THE importance of a good color man in the paper mill is, in many cases, not fully realized. A modern paper mill may cost from a million dollars up to several millions, depending on the size and number of machines. A modern paper machine may cost up to a million or more, depending on its width and speed. The installation of a laboratory consistent with the size of the mill is expensive, the cost of some of the precision testing machines running into hundreds of dollars. Raw materials are taken into the mill in large quantities. A medium sized sulphite bond mill producing 150 tons per day would use approximately 300 cords of wood per day. If the bleached sulphite were purchased, something over 150 tons would be required at a cost of approximately $9,000. In addition, there are other raw materials including chemicals, dyes and paper machine clothing, the latter running into large sums over a short period of time.

The operation of a paper mill usually requires a manager, a purchasing agent, a superintendent and a large number of smaller executives and high priced machine help. Down the line among the smaller fry, so to speak, is the man usually designated as "color man." Some might say that most of the foregoing is entirely irrelevant to the subject of a color man, but the author wants to emphasize the connection between the product of an expensive plant, expensively operated and one of the men who is responsible for the salability of the product. The highest grade materials may be purchased and used, the paper may pass all the tests of the various precision machines in the laboratory and be all right in every other respect, but if it is off color, it has to be culled and sold as a job lot or reworked, either of which involves a loss. The color is one of the most important factors in the salability of paper, and it is important that the coloring be supervised by a man who knows dyestuffs, one who can match shades, and who can minimize losses caused by off-color paper.

In the earlier days of papermaking, the superintendent usually fought the battles with the colored papers. One of the author's earliest recollections connected with paper coloring is of a day spent dissolving color for a superintendent who was trying to match a shade of gray. After a long day in which many beaters were put over the machine and culled, the job was given up until the next day when an approximate match was obtained. Papermaking is more complicated now; superintendents do not have much time to devote to color, and, as customers demand close matches, the tendency is to delegate the color matching to the boss beaterman, to the paper mill chemist or to a specially trained color man.

Many of the larger mills now employ a trained color man and it should be emphasized that it pays. The management might think it unnecessary to spend up to $300 a month or even more for the services, but it should be remembered that a good color man might save that much several times a month in a mill making a considerable number of colors. Machine time is usually calculated at so much per hour and an average paper machine will run from $25 to $50 or more per hour. That is, if the machine is down for one hour it means the loss of that much money. It will be seen that a color man who can obtain a match in 10 or 15 minutes after the paper is on the

reel can save $25 to $50 over the man who might lose over an hour's time. One or two color changes might pay the difference between a mediocre man and a trained man. If the changes are frequent, the saving might more than pay the salary of a really good man. It should be remembered also that a man who is not fairly sure of what he is doing might lose several hours in obtaining a shade.

Many mills have color inventories of 30 to 50 or more dyestuffs when half the number might be sufficient. A good color man can work these inventories down so that only the necessary dyes will be in the color room and there will be no duplications in the list. It is common to find the same dyes under different names in a color room and used in different shades under the assumption that they possess different properties.

A trained color man will be able to intelligently select dyes for specific purposes, depending on the properties desired. If an order comes in for a certain sheet to be non-twosided, he will know just what dyes produce non-twosidedness and will not make the mistake of running up a lot of unsalable twosided paper. In dyeing clay loaded sheets, he will not make the mistake of using a dye that fixes on either the clay or the fiber and produces two-sidedness, but he will balance the sides of the paper with dyes that will color both the fiber and the clay. In short, a trained color man will know what to expect of every dye that he puts in the beater.

It has been said that salesmen are born, not made, but it is usually necessary to make a color man. Of course, it is essential that a color man should have certain assets or characteristics and these may be listed as follows:

Color Eye

A color man must necessarily be able to *see* color throughout the range of the spectrum, and a color test will show if the eyes are normal as regards color. Probably one of the best tests is the so-called Japanese test, a test originating in Japan, in which white pages are covered with various colored dots. The colored dots are so arranged that the normal eye can easily pick out a number on each page and not see numbers on several pages where they do not exist. A partially color blind person will call some of the numbers incorrectly or see numbers where there are none. The prospective color man should be able to pass this test without error. One mistake might indicate partial color blindness in certain shades, as for instance a tan or brown. In matching a tan or brown shade, red might be seen in the sheet when in reality it might be greener than the sample. This could hold true in yellows, buffs, blues and greens.

Judgment

Judgment, as applied to a color man, may be defined as the ability to decide quickly what dye to use and how much. A shade employing two dyes in the formula might be run over the machine and when on the reel might require a third dye to produce a satisfactory match. A color man might decide on the right dye, but if his judgment were poor on quantity, too much might be added and a beater or chest of stock spoiled. Judgment in doctoring shades might be called training or experience, but it has been found that some men never seem to acquire the faculty of making the right additions, while with others it seems a natural gift. Of course, training and experience will aid in developing a man who does not possess any great amount of natural good judgment.

Responsibility

Executives usually have difficulty in obtaining assistants who are willing to assume responsibility. The more responsibility a man can and will assume the more valuable he is, even though a mistake is made occasionally. Was it not Teddy Roosevelt who said a man who never makes a mistake never gets anywhere? The reason is obvious. Even good color men make mistakes occasionally but an intelligent color man will profit by them. The color man should be capable and willing to assume the responsibility of making all color matches and passing on all shades run in the mill. If he alone is responsible for all colored work done in the mill, it is easy to fix the blame if by any chance a complaint on color is received from a customer.

It is very difficult for two or three men to match a shade and pass on the results. Even though none of them might be actually color blind, they might not always see a shade exactly alike, and if the job is left to a good color man to work out alone, controversy will be avoided and final results should be satisfactory. A case is recalled of a manager and a superintendent, one of them having a bad color eye for yellows and buffs. It was never known which one had the bad eye, but it was almost tragic every time a yellow or buff was matched on the machine. The superintendent matched the shades and an argument ensued every time one of these shades was run.

Training

No matter what qualities a man may possess, he requires considerable training before he will be able to match colors in the mill and to pass on shades. The training is probably the most important of all and unless the prospective color man has been brought up in the beater room, so to speak, and has acquired a considerable knowledge of dyes, probably the best way to obtain the preliminary training is to spend a month or two in the laboratory of a dye manufacturer. The large dye companies maintain these laboratories and students of color may obtain quite a thorough knowledge of the working properties of all dyes, make dyeings of all colors on various stocks and be trained in the selection of dyes for various purposes. He will be able to return to his mill with a complete set of dyeings of all dyes he might use, with light tests and other fastness properties shown. In all probability, he will have practiced matching shades made in his own mill, or similar shades, using the most practical combinations. In addition, the student will have made a study of laboratory methods and procedures both in matching shades and in testing dyestuffs so that similar work may be done after returning to the mill.

All of the above will give the potential color man a theoretical knowledge of color matching, but to put it to use in the mill requires considerable mill training. Local conditions are different in the different mills

and methods and procedures which work well in one mill might give indifferent results in another. It might be said that each mill is a problem in itself. Also it takes what might be called practice or possibly experience to be able to build up a shade in the beater and have it come close to the sample when the sheet is on the reel. However, after working on a machine for a period of time a man should be able to forecast just what changes will take place in color between the beater and the reel.

A word about the chemist-color man. A knowledge of chemistry is not absolutely essential to a good color man but it has been the author's experience that a chemist will generally make a much better color man than a man without a knowledge of chemistry. A chemist-color man knows more about the chemistry of the dyes he is using and just what reactions he may expect from the various chemicals that might go into a sheet of paper.

This recalls the incident of an unschooled beater-engineer, who, on the night shift, was told to harden up a chest of soft stock with some size and alum. He mixed the size and alum in a tub and poured the mass through the jordan into the machine chest. The machine crew spent most of the night taking spots off the wire and all because the engineer did not realize what would happen when the size and alum were mixed outside of the beater.

In many mills the color man has a knowledge of beating stock and usually supervises these operations. A really good man can assume full charge of all operations in the beater room and be responsible for the stock in every way as it is delivered to the paper machines. In this way he can become one of the most valuable men in the personnel of the mill.

Museum Exhibits Wax Model of Early Paper Plant

John Winters Fleming

A NEW, unique and permanent exhibit is being shown in the Knox Hall of Civilization, Buffalo Museum of Science, Buffalo, New York. This exhibit, which is titled "Early Industry," contains miniature cast wax models of ancient man and his utensils and materials showing early days of twenty-two industries.

The miniatures, exactly and exquisitely modeled in perfect proportions and relationships, were made by preparators in the Division of Preparation of the Buffalo Museum of Science, under the direction of Dr. Carlos E. Cummings, director of the museum.

One of the oldest industries depicted is the paper-making group which shows the ancient Arabians manufacturing paper from the inner bark of the mulberry tree. One miniature shows a workman stripping the inner bark of the mulberry tree; another is shown mixing the bits of bark with bone glue from the pan on the stove (to act as binder). The third workman is shown spreading the pulp on a bamboo frame (linen frames were also used) for drying after removal from the glue pot. Nearby are seen the covered frames in process of drying. The drying took about one day.

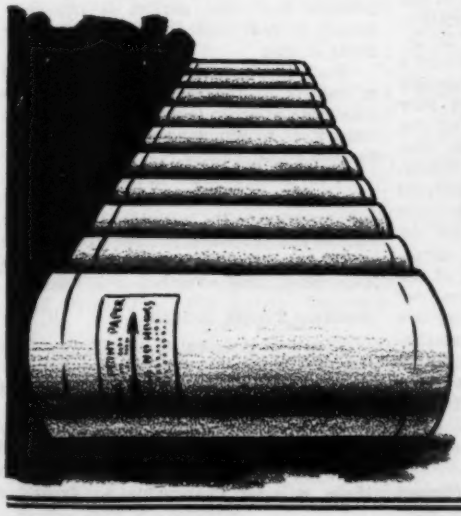
Unlike so many of ancient man's early industrial discoveries, the evolution and development of paper was not accidental. Rather it was the result of an infinite number of deliberate attempts to find an ideal writing surface. Before paper was made, ancient man had tried many different substances and materials: tree leaves, stone slabs, wax tablets and the prepared skins of animals, to name but a few.

Paper Sketches---

TEN COTTAGES AND A 10-ROOM VILLA WERE MADE TO ORDER ENTIRELY OF PAPIER-MÂCHÉ BY A LONDON MANUFACTURER IN 1853 AND SHIPPED TO AUSTRALIA WHERE THEY ACTUALLY WERE USED AS DWELLINGS.

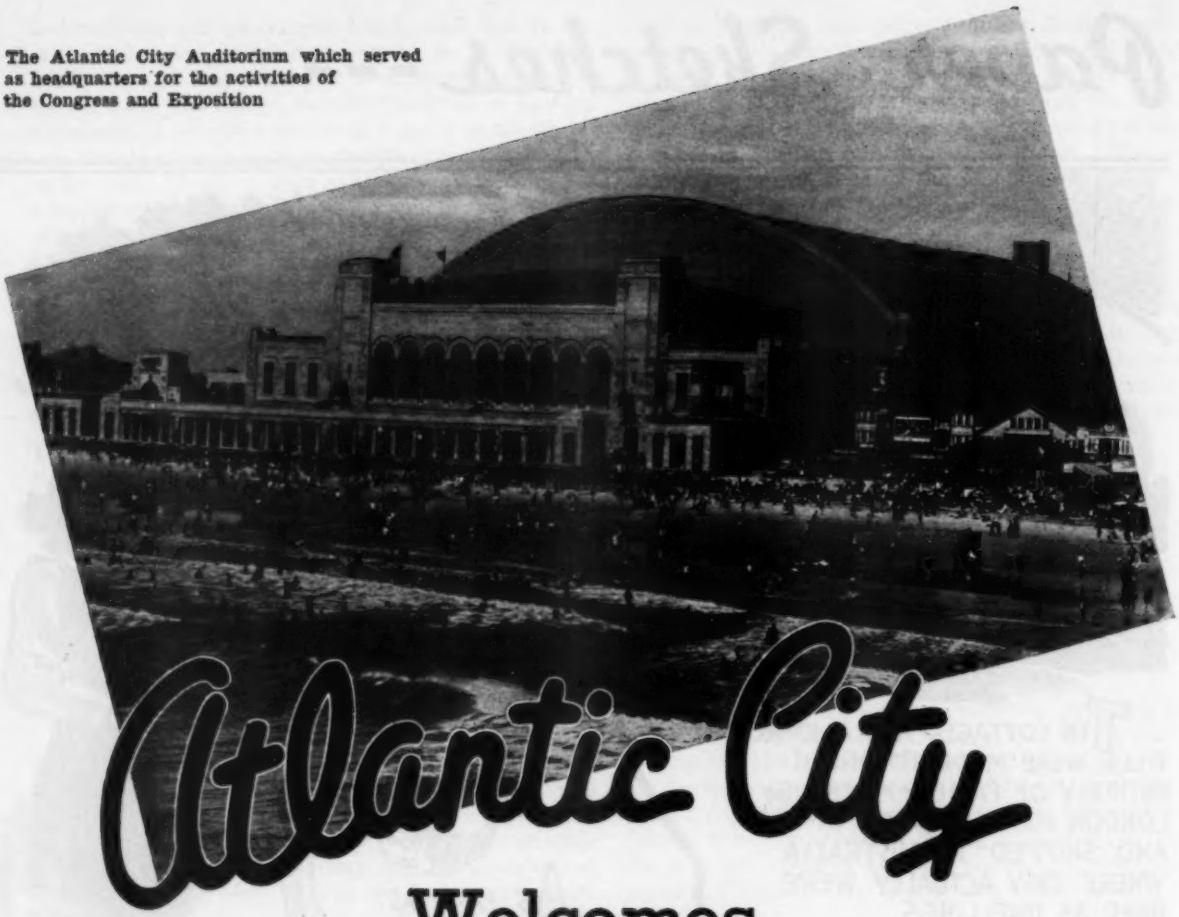
AS EARLY AS 1586, WALL PAPER HAD BECOME SO POPULAR IN PARIS THAT IN THAT YEAR THERE SPRANG UP IN THAT CITY A PAPER PAINTERS GUILD, KNOWN AS THE, "CORPORATION OF DOMINO MAKERS, TAPESTRY MAKERS, AND PICTURE MAKERS."

FOR EVERY TON OF NEWS-PRINT PRODUCED DAILY, TWO MEN ARE SAID TO BE EMPLOYED IN THE MILLS AND TWO MORE IN FOREST AND ALONG THE WAY TO CUT THE WOOD AND DELIVER IT.



TO ENCOURAGE THE HOME MANUFACTURE OF BETTER PAPER HANGINGS DURING THE REVOLUTIONARY WAR, THE CITY OF PHILADELPHIA HELD ANNUAL EXHIBITIONS AT WHICH THE VALUE OF PRIZES AWARDED WAS MADE DEPENDENT UPON THE QUALITY OF THE PRODUCTS DISPLAYED.

The Atlantic City Auditorium which served as headquarters for the activities of the Congress and Exposition



Atlantic City Welcomes 25th Annual Safety Congress

WELCOMED and stirred by the martial music of Governor Hoffman's Band as it started its parade up the Boardwalk each morning at nine o'clock—these men, designated as the official "eye openers" of the Congress, were formerly members of the 114th Infantry Band who were cited for bravery in action in France—one of the largest gatherings of delegates and visitors ever assembled in the cause of Safety, attended the twenty-fifth National Safety Congress and Exposition in Atlantic City, New Jersey, October 5 to 9, inclusive.

The city was in gala attire and the weather ideal for the occasion. Nearly 400 speakers in 150 different sessions emphasized accident prevention in industrial plants, on the street, in the home, in schools, in the air and at sea. The meetings were held in the Chelsea, Ritz-Carlton and Ambassador hotels and in the Atlantic City Auditorium, the Grand Ballroom of which was given over to the Exposition, a huge display of equipment for safeguarding dangerous operations of all kinds.

Governor Hoffman Addresses Annual Meeting

The annual meeting of members was held Monday morning, October 5, in the Chelsea Hotel. Following the invocation by Rev. Robert Arthur Ellwood, D. D., Founder-Pastor of the Boardwalk Church, Atlantic City, The Honorable Harold G. Hoffman, Governor of New Jersey, and General Chairman of the New Jersey Congress Committee, was introduced by Mayor Charles D. White.

In his sparkling and inspiring address of welcome, Governor Hoffman warned that "Safety cannot be enforced by threat. It must be developed by education and illustration." Speaking of the National Safety Council's Five-Year Campaign, started January first of this year in acceptance of his proposal that a nation-wide campaign be instigated to cut motor vehicle deaths 35 per cent by the end of 1940, he cited a reduction of two per cent during the first eight months of this year, resulting from the organized efforts of 30 states.

"For anyone to be careless, indifferent or stupid in the driving of an automobile, the operation of a machine, or the handling of a thing normally as helpless as a cake of soap," he said, "is an admission that that person is not competent to deal with the ordinary equipment of life.

"Such incompetence is the chief cause of failure of the safety element. It is due more often to lack of understanding than it is to ignorance—an inability to foresee consequences.

"That state of mind is today the greatest and most dangerous enemy of the human race. In individual affairs it causes accidents destructive to life, limb and property. In public affairs it causes war, waste and economic distress."

Accident Trends in 1936

Although it is estimated by the Statistical Bureau of the National Safety Council that there will be fewer deaths from motor vehicle accidents in 1936, deaths from all accidents will probably reach a total of about 110,000, or 10,000 more than last year. Six thousand of these will be chargeable to excessive

heat; the remaining 4,000 will result from general increases in home, public and occupational accidents. In addition to the fatal accidents, there will be approximately 9,500,000 non-fatal injuries and a national economic loss of approximately $3,800,000,000.

Industrial Accidents—Deaths arising out of gainful employment are expected to number about 17,500 in 1936, an increase of 1,000 from the previous year. The advance results partly from increased exposure due to more men at work and partly from an abnormal number of excessive heat fatalities in working men this year. In addition, it is estimated there will be approximately 1,500,000 non-fatal injuries and an economic loss of $650,000,000.

Education Is Keynote

Dr. C. H. Watson, medical director of the American Telephone and Telegraph Company and president of the National Safety Council, said safety education had pronounced effect since the Council was organized by a group of iron and steel engineers twenty-five years ago.

"We might point," he said, "to 200,000 lives that would have been lost this year in industry and on our transportation systems had this death rate of 1913 continued unchecked."

Willard E. Givens, executive secretary of the National Educational Association, Washington, D. C., speaking on "Education—the First Line of Attack," proposed that all the 26,000 high schools in the United States teach young persons how to drive automobiles safely.

Howard Coonley, chairman of the board, Walworth Company, New York City, spoke on "The Influence of Safety on Economic and Social Welfare."

Paul G. Hoffman, president of Studebaker Corporation, South Bend, Ind., denounced the diversion of highway funds to other purposes. He said $750,000,000 of highway funds had been diverted by states during the depression.

"That $750,000,000 would have built some 20,000 miles of modern highways," he said. "Trunk line highways must be divided, grade crossings must be separated, and every year of delay means loss of thousands of lives."

Industrial Safety Lectures

A series of early morning classes had been arranged to meet the wishes of Council members who desire to promote safety in foremanship by the conference method. These 55-minute lectures on Safety in Foremanship, by Arthur C. Harrocks, director of education, Goodyear Industrial University, Akron, Ohio, were divided as follows: (1) Safety Consciousness; (2) Safety Education and Promotion; (3) Safety Responsibility; (4) Safety Justification.

In addition to the regular sectional meetings, every opportunity was given to those seeking information and instruction on any phase of safety education to obtain valuable help through the variety of specially arranged panel discussions, the Safety Exchange or General Round Table Discussion, Safety Movies and the lectures.

Exposition

Some eighty-six exhibits of industrial and public safety equipment were grouped in the ballroom of the Atlantic City Auditorium. The Accident Prevention Equipment Manufacturers Section presented a drawing chance on a Studebaker car to every delegate who qualified with a minimum of one hour spent on each of two days in the Exposition. Time cards were given to each registrant and these were checked in and out.

Entertainment

The President's Reception and Dance was held Monday evening at the Ambassador Hotel—music by Hal Kemp and his Radio Orchestra.

The Annual Banquet in Westminster Hall of the Chelsea Hotel on Wednesday evening, was a tremendous success. Governor Hoffman was toastmaster and Col. Willard T. Chevalier, vice-president of McGraw-Hill Publishing Co., New York City, was the after-dinner speaker. He spoke on the subject, "Design for Living Safely." Entertaining features by courtesy of E. I. Du Pont de Nemours & Co., Wilmington, Del., consisted of a Broadway Variety Revue of 12 vaudeville acts.

The annual Congress Fun Fest took place on Thursday evening at the Traymore Hotel. "A Night in Monte Carlo" and "A Real Mardi-Gras" were combined in one big party, with dancing, refreshments and entertainment.

A special entertainment program of exceptional interest and pleasure was provided each day for the large number of ladies that attended the Congress. A number of special features included an auto tour to Ocean City, Sea Isle City and return via the Shore Road; a special performance by the Atlantic City Repertoire Theatre Group; a card party, and rolling chair rides on the Boardwalk.

National Officers Re-elected

Dr. C. H. Watson, president of the National Safety Council, and all other officers who served during the past year were re-elected. Dr. Watson, who is nationally known in the medical profession, is devotedly admired for his genial and efficient leadership.

Next Congress in Kansas City

It has been definitely decided to hold the next annual Congress in Kansas City, Missouri. The exact date will be announced later but it is presumed it will be sometime during the month of October.

MEETINGS OF THE PAPER AND PULP SECTION

The meetings of the Paper and Pulp Section were held in four, succeeding half-day sessions in the Atlantic City Auditorium beginning Monday, October 5. The Annual Luncheon was held on Wednesday at 12:30 o'clock in the Ambassador Hotel.

The attendance was one of the best in many years, registering a total of sixty-eight at the last day's session, coming from fifteen different states and the Dominion of Canada.

Earl E. Grant, general chairman, opened the sessions with an account of the past year's activities and progress of the Section. This included summaries of the various committee activities, as follows:

Increase in Membership—In spite of some cancellations, there are more members this year than last which is evidence of continued growth. Vice-Chairman F. L. Irvin was congratulated on his success in obtaining the co-operation of mill members by their contacting certain non-member mills and securing their membership. Paper and Pulp ranks seventh among the sections of the National Safety Council.

Program Result of Careful Study—Secretary G. J. Adams was praised for the time and effort he expended in preparation of what proved to be a splendid program.

Upward Trend in Engineering Correspondence—During the year, several mills had submitted questions regarding special hazards. These were mailed to the Engineering Committee Chairman, J. H. Turner, who dug up the required information, sometimes by questionnaire. Such co-operation was evidence of what good might be obtained from a more general practice of corresponding with committee chairmen in efforts to solve problems.

Credit Given for Fine News Letter—For consenting to carry on this important part of the Section's work last year, Editor Fred W. Braun, of Employers Mutuals, Wausau, Wis., was thanked and praised for giving the Section an outstanding News Letter. Mr. Braun was successful in obtaining co-operation of many of the members—an essential part of this sectional activity.

Tabulation of Accident Statistics—No attempt was made to report or comment at this time on the compilation of accident statistics, other than to thank Committee Chairman A. E. Winslow for the splendid piece of work he has done for the past two years. A summary of the report is given in following paragraphs.

Poster and Health Committees Should be Utilized—Very little if any use has yet been made of these two helpful and important committees. Chairman Braatz, of the Poster Committee, and Dr. Paine, of the Health Committee, have been willing to help and advise if called upon.

Rules and Operation of the Contest Satisfactory—Complimentary and satisfactory expressions were conveyed to Committee Chairman Dowd for the Annual Safety Contest among mill members of the Section.

Mr. Grant concluded by expressing the extreme pleasure it had given him to work with the splendid group of men who comprised the Section's executive committee.

Accident Experience Exchange

Neatly bound mimeographed copies of the 14-page summary report of the Pulp and Paper Section Accident Experience

Analyzation of 647 Accidents in Paper and Pulp Mills Reported in Accident Experience Exchange

Types of Accident or Causes of Injury	1936 No. Cases	1936 Days Lost	1935 No. Cases	1935 Days Lost	1934 No. Cases	1934 Days Lost
Falling or slipping material and objects	16	245	51	7,168*	66	7,375*
Falls (from heights or levels)	18	655*	31	1,033	47	1,268
Hand tools	3	370*	1	Not Given	28	377
Lifting, pulling, pushing and prying	7	191*	7	134	27	199
Caught in revolving rolls	6	684*	16	1,240*	24	6,932*
Handling material and objects	14	344*	20	384	19	410
Caught in gears, belts, etc	4	232*	5	133	19	7,501
Caught under or run over by	0	0	2	51	10	52
Struck by flying objects	3	140	6	728*	10	85
Caught or jammed between objects or material	5	102	19	645*	7	72
Splashing liquids	0	0	0	0	6	38
Stepping in holes or on objects	2	71	8	61	6	42
Striking and bumping against things	0	0	7	105	4	77
Burns and scalds	5	119	15	184	7	7,914*
Hot water and liquids	0	0	6	119	3	1,854
Hot pipes and materials	1	20	5	29	1	54
Contact with flames	0	0	1	3	0	0
Electric, livewires	3	40	2	13	2	6,003*
Acid, caustics, chemicals	1	59	1	20	1	3
Explosion, explosive action	2	80	4	46	6	83
Foreign bodies in eyes	0	0	2	42	2	7
Clothing caught in machinery	0	0	2	319	2	65
Miscellaneous	23	1,025*	43	11,970*	10	187
	108	10,160	239	24,243	300	32,674

**Indicates standard time charges are included.*

Exchange, were distributed to those who attended the meeting by A. E. Winslow, chairman of the Statistics Committee. This year, the chairman received less than half the number of reports submitted for the 1935 tabulation, which might indicate that neither the proper approach nor questionnaire has been found.

In 1934, there were 300 reports submitted, last year 239, and this year only 108 were received in time to be included in the tabulation.

Still believing that the data submitted even by a small percentage of the Section members will, over a period of time, show important trends and possibly lead to a more comprehensive understanding of our Safety problems, Mr. Winslow believed the lack of interest is nevertheless apparent.

Naturally, it is not only dangerous but extremely unwise to attempt to draw conclusions from inductions based upon data covering only 108 accidents. Endeavor was therefore made to point out only such trends as are still consistent with the two previous tabulations.

Twenty-four plants out of the 125 reporting in the Annual Contest submitted reports for the Exchange. Of the 18 companies and 36 plants reporting in last year's Exchange, 9 companies and 18 plants were included in this year's tabulations. Six companies operating 18 plants submitted 88.87 per cent of the records for study.

The time lost as a result of the 108 accidents recorded for this year's study amounted to 10,160 days. This is approximately 4 per cent improvement over the average days lost per accident recorded in last year's study. The accidents per plant this year range from 1 to 14, which is about 39 per cent improvement over the preceding year and approximately 80 per cent over the first year's study.

This year, the average time lost per individual is 94.1 days, or a reduction of about 6 per cent over last year, and 13.6 per cent over the preceding year. There is one fatality in this year's study compared with two last year and four the preceding year, as well as four finger amputations and no loss of eyes against ten finger amputations last year and seven the previous year, and one loss of an eye in each of the two years.

Sixty-one per cent of those injured were tour workers, 37 per cent day workers, and 2 per cent not classified. The ratio of tour workers and day workers is identical with last year's report, making proper allowance for those not classified.

From a tabulation of accidents occurring at various hours of the day, there seems definite evidence to substantiate the theory of greatest accident occurrence between 9 and 12 in the morning and 2 and 4 in the afternoon. Mr. Winslow said that a study of his own plant records during recent years shows no serious accidents and very few lost-time accidents occurring during the night tour, which is 10 p. m. to 7 a. m.. The question then naturally arises, if employees can work in comparative safety during the night, why do so many accidents occur during daylight hours when, theoretically, the experience should be less than during the hours of darkness?

Tabulation by departments revealed that *Machines* still account for the largest number of accidents, with the *Repair and Maintenance Department* a close second. The *Beaters* show marked improvement over both of the preceding years and *Pulp Mills* improved greatly over 1935 although not as well as in 1934. For some reason the *Finishing Departments* ran into an extremely bad year, having about a 50 per cent increase over the 1935 figures. Generally speaking, one expects the *Wood Room* to be a very dangerous place, yet the present year's tabulation shows a phenomenal decrease.

Bruises, abrasions and contusions again account for the greatest number of injuries in the Nature of Injury Tabulation, with 30, or about 28 per cent of the total, while fractures and amputations come second with 25, or about 23 per cent. This is the reverse of last year's report, but coincides with that of the year previous.

Types of Accidents or Causes of Injury are shown for the three years in the accompanying table. It will be seen that the general trend follows roughly the indications of the previous reports.

Election of Officers

The following officers were elected for the ensuing year:

General Chairman—George J. Adams, International Paper Co., Glens Falls, N. Y.

Vice-Chairman in Charge of Membership—Arthur E. Winslow, Hollingsworth & Whitney Co., Waterville, Maine.

Secretary and Program Committee Chairman—F. A. Robinson, Kimberly-Clark Corporation, Neenah, Wis.

News Letter Editor and Publicity Committee Chairman—Clayton Braatz, Marathon Paper Mills, Rothschild, Wis.

Contest Committee Chairman—A. Scott Dowd, THE PAPER INDUSTRY, Chicago.

Engineering Committee Chairman—D. B. Chant, Ontario Pulp & Paper Maker's Safety Assn., Toronto, Ont, Canada.

Health Committee Chairman—Dr. Edward W. Paine, Hollingsworth & Whitney Co., Waterville, Maine.

Poster Committee Chairman—J. H. Turner, Consolidated Paper Corp., Ltd., Montreal, P. Q., Canada.

Statistics Committee Chairman—Fred W. Braun, Employers Mutuals, Wausau, Wis.

Members at Large—Ernest Augustus, Mead Corporation, The, Chillicothe, Ohio; W. J. Brennan, Maine Department of Labor and Industry, Augusta, Maine; M. W. Dundore, Beloit Iron Works, Beloit, Wis.; K. L. Faist, The Champion Paper & Fiber Co., Hamilton, Ohio; W. A. Gleason, Hammermill Paper Co., Erie, Pa.; E. E. Grant, The Crystal Tissue Co., Middletown, Ohio; J. J. Hastings, Port Huron Sulphite & Paper Co., Port Huron, Mich.; C. O. Holmer, Minnesota & Ontario Paper Co., Minneapolis, Minn.; F. L. Irvin, St. Croix Paper Co., Woodland, Maine; D. A. McAlery, Fraser Companies, Ltd., Edmunston, N. B., Canada; Don E. McDowell, Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich.; Arthur Murray, Container Corporation of America, Chicago; H. G. Noyes, Oxford Paper Company, Rumford, Maine; J. J. Pizak, Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.; Samuel Pruyn, Finch-Pruyn Co., Inc., Glens Falls, N. Y.; B. D. Rogers, Bird & Son, Inc., East Walpole, Mass.; F. H. Rosebush, Nekoosa-Edwards Paper Co., Port Edwards, Wis.; L. R. Simpson, The Brown Paper Mill Co., Inc., West Monroe, La. A representative of the American Paper and Pulp Association, an appointment to be requested of Secretary Charles W. Boyce.

Groundwood Hazards and Their Elimination

T. W. Small, superintendent of the Abenaquis Mills of Hollingsworth & Whitney Co., Madison, Maine, presented a paper on groundwood hazards as the first contribution to the Tuesday morning session.

The Value of Personal Contact—Before considering the hazards peculiar to the process under discussion, Mr. Small emphasized at some length the point that to properly evaluate a hazard one must, first of all, know what sort of man it is the hazard threatens.

In the average groundwood mill the labor turnover is small. It is generally accepted that a small labor turnover is a distinct advantage over a large one. The safety program can be developed over a long range. Education may be of a progressive nature, and ground gained is rarely lost.

The small plant also has the advantage that the man at top of the safety program is also the head of the plant organization, a golden opportunity denied the executives of larger organizations. He can make personal contacts with all of his employees, which is a factor the speaker expressed as very important.

Another advantage is that usually the employees are all known to one another, forming a well-knit personnel unit. A strong feeling for safety engendered in the nucleus of this unit quickly spreads through the whole.

Some of the disadvantages common to groundwood mills are that most of the labor is unskilled, or semi-skilled, and the personnel has a distinct tendency to greater individuality of its members, making the organization less amenable to the group spirit.

Mr. Small divided hazards into two classes—those connected with the handling of materials and those relative to the production process.

Handling of Materials—The wood yard is one of the most hazardous places. In unloading wood from cars, there is the danger of wounds from pickaroons, hand hooks and pickpoles; contusion accidents from falling sticks; and slipping and falling accidents which are particularly serious if the car is unloaded from a trestle. The remedies are varied and must be applied to suit the particular situation, but, in general, accidents involving puncture wounds may be largely averted by putting shin guards (the kind hockey players wear) on the workmen

GEORGE J. ADAMS
General Chairman of the Paper and Pulp Section

and seeing to it that they do not work too near together in the car. Safety shoes will eliminate the most of contusion accidents, and hazards of falling and slipping can be partially controlled by keeping the cat-walks in the best of condition and providing a safe means of getting in and out of cars. In those cases where cars are unloaded from a trestle, the only sure means of preventing serious trouble is the safety belt.

Handling of wood to and from a conveyor has proved to be a prolific source of accidents. Most of them arise from carelessness, ignorance, or improper methods, but here again safety shoes, toe guards, shin guards, rigid inspection for proper footing, and a special study and revision of methods will be found effective.

Handlers taking wood from the pile may be protected by strict regulation against undermining the pile or causing an overlay, and consistent supervision to see that the logs do not bunch up. When an over-hang does develop, said the speaker, allow no one but the foreman or sub-foreman to correct it. At Madison, the hook-pole has been found the best tool to use for this work.

The handling of heavy materials such as pulpstones, shafts, pulleys, etc., should be carefully watched. To a large extent the success of the safety program here depends upon the foreman or leader of the gang.

Handling Material by Machines—This type of hazard concerns the use of conveyors, power trucks, chain and rope falls, tower hoists, chain and hook drags, etc. These devices are almost always standard and are well covered in standard safety literature. Inventory should be made of all such machines and a routine inspection established that will insure against accidents arising from mechanical failure.

It should be an unalterably established practice that nothing whatever should be supported by tackle of any kind, only so long as it is being raised, lowered, or as in the case of falls on an overhead trolley being moved laterally. At all other times, such material should be fully supported by horses or blocks.

Hazards in the Production Process—Disc barkers have always been a source of worry to safety men. Operators, when reaching for the rope to pull down the barker attachment, sometimes miss the rope and put their hands against the revolving knives. Such accidents may be eliminated by the use of a bracket and pulley so applied as to bring the rope out from the barker disc 5 or 6 inches.

Losses of fingers and thumbs at the splitter that cannot be guarded by any mechanical means can be eliminated by making it imperative that operators handle the stick by the sides only. By training the operator to seat the stick firmly on the anvil before he allows the splitter to hit it, those frequent accidents caused by the stick jumping and striking the operator in the stomach also can be eliminated.

In the grinder room, the bursting stone is perhaps an infrequent happening, yet its cause and prevention should be thoroughly understood. The speaker referred more particularly to quarried stones and outlined a manual of procedure for their care and operation.

Floors and walks about the gates, water wheels, grinder and wet machine rooms, should be kept clean and in good repair. They should be washed regularly with caustic.

Discussion—A general discussion followed which concerned principally various methods of getting men in the yard to wear safety shoes and guards. Improvements in styles of safety shoes are helping to make men want to wear them. In extremely cold climates, hard rubber or fiber caps have proved more comfortable and satisfactory. Rubber boots loaned by one company to their men include toe caps.

Method of Training in Safety

Harold G. Noyes, manager of industrial relations, Oxford Paper Co., Rumford, Maine, was the next speaker on the Tuesday morning program. The subject which had been assigned to him was the selection and training of employees in

the paper and pulp industry. As it was impossible to deal adequately with such a broad subject in a short space of time, he confined his discussion to a method of training in safety, which is after all an important part of any fully developed employee training program.

Selection and Placement — Generally speaking, successful selection of employees depends upon a specialized agency to perform this function. This means then that the individual or individuals who carry out this function should know in detail the personal qualifications necessary to fill every job for which placements may be made. Many mills have set up job specifications covering the several occupations, which may be used by the employment office in carrying out the work of selection and placement.

Included in the specifications may be the hazards of the job, or other specifications which may limit placement because of certain physical qualifications on the part of the applicant. Today some companies have made thorough analyses of operating jobs for this purpose. Most mills have a physical examination prior to placement.

Training the Individual—Careful consideration of the type of individual when he is placed on the job will tend to reduce accidents which may be due to having the wrong type of men on the job. In the same manner, better placements may be made if the employment office has at its command job specifications, and takes into consideration the training and experience, as well as ability and aptitude of the person being considered for placement.

We find, said Mr. Noyes, in studying the problems of supervision and foremanship that one of the most important duties of the supervisory staff is training individuals who comprise the working force. Such training primarily deals in proper *thinking*, with teaching the men to operate a piece of equipment and turn out a standard product, satisfying the requirements of both quality and quantity at a low cost.

Standard Practice Is Safety—Wherever the individual faces a new situation, training is necessary. Consequently the speaker listed three types of training in modern industry: (1) breaking in the new man or transfers on the job; (2) improving regular workers on the job; (3) up-grading the workers already on the job. This is true for safety training the same as training for operation and production. In fact, he said, if a person learns to do an operation correctly, he will automatically learn to do it in the safe way. Consequently, if it were possible to get over to the foreman and supervisor the fact they have a training job to do, that safe practice and standard practice are one and the same, and then give them the tools with which to teach, much of our safety program would be accomplished at this point.

Instruction Is Part of Supervision—Supervisors and foremen, in order to carry out their responsibilities must learn to teach. And since teaching is an art or a science, management must see to it that the foreman does know his correct function. For if a foreman's operating practice is wrong, he naturally will teach his workmen to do it the same way. Reference for information on this subject was made to Bulletin No. 168, Trade Industrial Series No. 49, entitled "Vocational Training for the Pulp and Paper Industry," published in 1933 by the Federal Boards of Vocational Education, Washington, D. C. This publication may be secured from the Superintendent of Documents, Washington, D. C., for twenty cents.

In industrial teaching, of which safety for workers on the job is a part, it is necessary that certain tools or masses of information be placed in the hands of the instructor. Certain thinking processes must be undergone by the foreman before he can attempt to impart the necessary information, and he must organize carefully the material with which he is to teach. He must wait patiently to see that the worker knows and can do that which he has taught him, and must check periodically to see that he is working in accordance with the procedure which he has been taught. Telling is not teaching, Mr. Noyes emphasized, and no teaching job is ever performed correctly until the learner can do the job as it should be done.

One Phase of Procedure—One method of arranging the instructional material in proper order so that it may be of assistance to the foreman in doing his work, is by using a modification of job analyses, which the speaker exhibited, specifically applied to job hazards. This may be used not only as a text book and guide but as a reference book by the foreman in supervising his department from a safety angle. It consisted of a chart, or a sheet of paper with the following headings: 1. Machine Job or Operation; 2. Hazards—What Can Happen to Cause Accident Resulting in Personal Injury; 3. Remedy.

Securing all of the facts is the first step in the training of men, said the speaker. Next is the impartation on the job. Much can be imparted in group meetings, and classes should be set up by levels—that is, by superintendents, foremen, supervisors, and skilled workers.

Discussion—In reply to a question as to how management should be approached and sold on the cost of a training program, the Dollar Sign was put up. The cost of rejections, cancellation of orders, and accidents more than justifies their correction through such a program.

The question was asked if an audit is made of the foreman's attainments, to ascertain if the training program is getting across. The reply was that the one in charge of the training program should visit the department schools now and then and check up.

Another asked if when operators are hired, is there a prospect of advancement. Certain jobs are originally set up as potentially progressive, so that when you are hiring a fourth-hand, you are hiring a machine tender.

The question was asked, is a foreman hired on his ability or his technical knowledge? The speaker hoped there would come a time when there will be standards for hiring foremen, as there are for operators.

Mr. Noyes was asked if he considered an accident a breakdown on the part of the foreman, to which he replied that he does if the accident is the result of an unsafe procedure.

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Paper Mill Safety from Supervisor's Standpoint

The safety qualifications of a successful supervisor were related Wednesday morning by George E. Fuller, groundwood superintendent, Finch-Pruyn Co., Glens Falls, N. Y.

In order to originate a comprehensive safety campaign, the supervisor must have a thorough knowledge of all problems of his department, the speaker said. The work of his department, however, has a definite relationship to that of others, being dovetailed so closely that it materially affects the efficiency of the entire plant.

The supervisor must know what is going on in other departments. Congested conditions resulting in accidents can be forestalled if department heads get together and discuss jobs before they are begun.

If some definite procedure is decided upon, in preference to a haphazard one, friction and ill feeling can also be avoided. For example, the superintendent of a plant decides that he wishes as part of a Sunday's work to change the location of a motor-driven vacuum pump, more than one crew of workmen being necessary to make the change. The electrical and piping crews cannot make the final connections until the mechanical crew has made a preliminary setting of the pump. A conference is called with each of the department supervisors present, at which meeting each supervisor details his phase of the job.

Each, mindful of the other's work, decides upon a procedure, a sequence of events, the staging required and protective measures for the workmen concerned. The job is completed with no mishaps because the safety of each employee was given due consideration.

Such orderly procedure is bound to produce efficiency and eliminate ill will and petty jealousies. This latter statement infers that the supervisor's attitude determines that of the employees. I believe this is especially true of the type of employee who is naturally narrow-minded and who looks for distasteful things to feed on.

Fortunately, in this era of universal education, this type of man is in the minority. From the supervisor's contact with men in passing through the rank and file, he has definitely graded his men in regard to ability. Each possesses distinct and yet different characteristics, no two alike, all thinking and acting differently. Some are honest, not only with themselves, but also with the em-

Representatives of winning mills accept Group Trophies awarded by the National Safety Council. In the center is the major trophy awarded by The Paper Industry

ployer; popular, cheerful, alert, broad-minded, possessed of initiative, and a genuine interest at heart in using company property. In contrast there is the fellow who is crafty, a good routine worker, but working only for the money he receives on pay day, and having a good time doing it by involving his fellow workers with incessant gossip.

He naturally wouldn't show these tendencies in the presence of a supervisor, but they will come to light in the course of investigating an accident in which he is involved. The ideal worker is progressive in things not directly connected with his work.

Stating that supervisors must beware of becoming stale on the job, Mr. Fuller said that initiative is a personal factor that may well spell the difference between success and failure in foremanship. A foreman who has the urge to introduce new and simpler methods of doing the old operations is bound to get the co-operation and confidence of his men. They sense that he is trying by brain to eliminate the excessive use of brawn, he declared.

Describing some of the personal characteristics of a successful foreman, Mr. Fuller said the supervisor should be endowed with personality and the outward appearance that makes one stand out from the rest of the crowd.

This individuality is a valuable asset, but coupled with character and notable traits such as honesty, self-respect, self-reliance, stability, moral backbone and charity, it is an irresistible force to any movement foreign to safety, he concluded.

Paper Mill Safety from Workman's Standpoint

Quoting from John Ruskin, "There is no wealth but life," the standpoint of the workman in paper mill safety was presented impressively by John L. Sullivan, paper machine tender, International Paper Co., Fort Edward, N. Y.

Our mill safety engineers, Mr. Sullivan believes, are of the best. They devote their time and energy to perfecting safety devices. The company spends the money to have them installed on moving machinery. The manager sees that they are installed but is unable to visit every nook and corner of the mill daily.

Whenever repairs are made, these safety devices must be taken off. Here is where Safety First is but a two-word slogan. Without exaggeration, he said, only 50 per cent of these devices are ever replaced. The result is inevitable; an accident occurs on some machine where the device was thrown aside after repairs.

An example was described: In a mill some years ago, the engineers had put a safety device on all paper machines in all the mills of that company. It consisted of a plank and four bolts and was attached to every dryer for the repair crew to stand on while repairing machinery, to protect them in case the machine was started while they were at work. Some time later, for some unknown reason, they were all removed. Lately, in one of these mills, a repairman was standing on the dryer where the plank should have been. The friction caught and the man was crushed to death. Within twenty-four hours, the same safety devices were replaced in all of the company's mills.

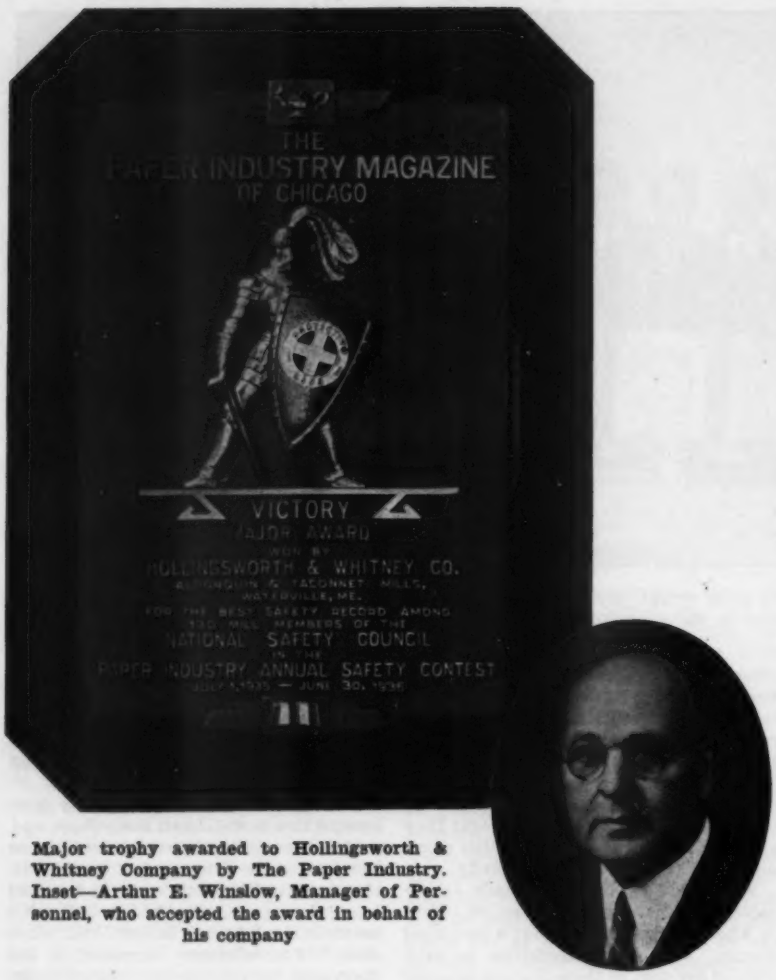
After an accident occurs, investigation starts, and so does the "buck-passing." When the smoke of battle clears away, the manager is left wondering who really was to blame.

The manager of a mill once issued a strict order that the first man caught using his foot to put on a belt which had slipped off the pulley, the crew would be discharged. Within a few days after the order had been issued, a workman started to run a belt on in this manner. "I told him it was strictly against orders," Mr. Sullivan said. The foreman standing by said, "John, you don't have to run the belt on, but I wouldn't tell him not to."

One day a state factory inspector came around to a certain mill some years ago, said the speaker. He left his findings on the desk of the manager. A master mechanic standing by read them and laughed, saying, "He has a hell of a nerve to think he will have all that work done." The manager happened in the door just as the master mechanic finished his statement and said, "You will do everything that the factory inspector has ordered done."

Another sample of negligence: It used to be a common occurrence in the machine room to see men slip, slide and fall, day after day on a greasy sill. Men would laugh at each other, the foreman joining in the laugh. It ceased to be a laughing matter when the chief safety supervisor from the head office chanced in one day and saw the slippery sill. The condition was remedied within twenty minutes. All of which goes to show, declared Mr. Sullivan, that the trouble must be low down in the ranks—just plain carelessness and negligence—lack of safety education.

A certain mill boasted of a well equipped First Aid Room, said the speaker, meaning that there was a competent registered nurse in charge during the day, ready and willing to co-operate to the fullest extent. When her duties for the day were finished, the First Aid Room was locked for the night and the key placed somewhere in the mill. An accident occurs during the night involving the need of a bandage, or perhaps a physician. It was the belief of the workmen that this condition was due entirely to negligence on part of the Safety First department and that



Major trophy awarded to Hollingsworth & Whitney Company by The Paper Industry. Inset—Arthur E. Winslow, Manager of Personnel, who accepted the award in behalf of his company

the latter was not co-operating to the fullest extent with the management. Why not have the key in a glass case, ready for all emergencies, by simply breaking the glass? asked the speaker.

The idea that Safety is a big part of the operating activities must be sold to every employer from the manager down, said Mr. Sullivan, and the idea that the safest way is the practical and most economical must be instilled in the minds of all employees. The management must assure itself that every boss is an enthusiastic booster of Safety First and responsible to his immediate supervisors. This attitude can be brought about by means of:

1. Lectures to men; repeating each lecture to all three crews, if necessary.
2. Better opportunity offered by management (mill manager, foreman, safety department, etc.) to workmen that they may become more familiar with the proper way to do their work.
3. More active representation of workmen on plant safety committees, where each employee can be made to feel that he is an integral part of the meeting.
4. Enforcement by mill manager of principles of safety being carried out by foremen, safety department and other supervisors. Inflict penalties if such principles are not carried out.

Thanks were extended by many to Mr. Sullivan for his excellent and impressive talk. It also was resolved that the Section would send to the International Paper Company an expression of thanks and appreciation for sending Mr. Sullivan to this meeting to talk on Safety from the workman's standpoint.

The Paper and Pulp Luncheon

The seating capacity at the Annual Luncheon in the Ambassador Hotel on Wednesday noon, was taxed to the limit. Copies of the Final Report and Ranking in the Safety Contest as of June 30, 1936, were distributed, and A. Scott Dowd, of THE PAPER INDUSTRY and chairman of the Contest Committee, presented the following data:

DATA ON THE 1935-1936 SAFETY CONTEST

For the first time, the total figures in man-hours worked for the period of the Contest has reached the sum of nine figures, or an increase over any previous year of more than 3500 employees. And while the total number of disabling injuries was greater, the average frequency rate was reduced from the previous record nearly 1½ points, about nine per cent. Also, there were a greater number of mills with frequency below average, than in the year before.

There were 130 mills entered in the 1935-'36 Contest, but only 123 remained at the finish. Five mills withdrew and two were not eligible under the minimum requirement of rules. There was a net increase of fifteen participants over the number that finished last year.

Actually sixteen mills had perfect scores, but two of them were not eligible under minimum requirements. The net of fourteen shown in the Report is an increase of four over the number that qualified and so finished the year before.

Comparing the records of each group with the results in the previous year, we find that there is a reduction of frequency in all cases.

Group A came the nearest to having a perfect score than has happened in that division for the past six years. Up to the eleventh month of the Contest, the Hollingsworth & Whitney mills at Waterville, Maine, had operated without a lost-time accident. The average frequency of 14.912 of this group, however, was but a fraction under what was made the year before.

Group B registered no perfect scores this year but reduced its average frequency 14½ per cent to the rate of 14.784.

Group C had two perfect scores, thereby reducing its average frequency 18 per cent to a rate of 18.127.

Group D had eight qualified perfect scores and reduced its average frequency 6 per cent to the rate of 18.405.

Division II, or the Re-Manufacturing Group, made the highest frequency reduction. Four of the sixteen plants entered in the Contest operated without a lost-time accident and reduced the group's average frequency 20 per cent to the rate of 8.98.

Division I, as a whole, reduced its frequency about 7 per cent to the rate of 15.634.

Increasing interest is shown in the record enrollment of 134 mills and plants to date in the 1936-1937 Contest. For the first two months, 40 units operated without a lost-time accident. The rules for the 1936-1937 Contest are the same as last year.

National Safety Council Trophies Awarded

Sixteen bronze plaques and five engrossed certificates were awarded to the winners of the 1935-1936 Paper Industry Safety Contest, by C. B. Auel, Manager of Employees' Service Department, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa., and a past president of the National Safety Council.

As Mr. Auel has represented the Council in awarding the Contest trophies to the Paper and Pulp Section for the past three years, his warm and friendly presence in this office is becoming an institution. With expressions of praise for the Section's progress and growth, he made the following awards:

FINAL REPORT—THE PAPER INDUSTRY ANNUAL SAFETY CONTEST OF MEMBERS, PAPER AND PULP SECTION, NATIONAL SAFETY COUNCIL

July 1, 1935, to June 30, 1936

Year	No. of Mills	Man-Hours Worked	Employees	Number of Disabling Injuries	Days Lost	Rate		Mills with Freq. below Aver.	Mills with Sev. below Aver.	Ratio		Days Lost per Injury	Mills with Perfect Records
						Aver. Freq.	Aver. Sev.			Empl. to Acc.	Non-Fatals to Fatals		
*1935-1936	130	100,491,110	45,915	1,517	.....	15.096	.....	71	.....	30 to 1	.....	.....	14
*1934-1935	110	86,867,184	42,378	1,439	.....	16.566	.....	63	.....	29 to 1	.....	.....	12
1933-1934	105	71,436,322	34,132	1,402	102,099	19.626	1.429	56	80	24 to 1	141 to 1	73	6
1932-1933	98	60,772,518	34,709	829	101,169	13.641	1.665	53	71	42 to 1	83 to 1	122	11
1931-1932	131	74,569,954	32,454	1,044	40,211	14.000	.539	55	69	33 to 1	60 to 1	39	9
†1931	125	48,715,543	39,796	787	17,263	15.744	.354	72	76	52 to 1	192 to 1	23	15
†1930	124	47,343,549	36,153	986	22,504	20.826	.475	55	66	37 to 1	163 to 1	23	11
†1929	123	49,776,515	36,916	1,311	25,073	26.337	.504	59	80	27 to 1	187 to 1	19	6
†1928	122	47,673,816	36,357	1,355	26,368	28.422	.553	64	76	27 to 1	150 to 1	19	8
†1927	119	43,802,804	33,786	1,468	28,396	33.514	.649	61	75	23 to 1	147 to 1	19	6

*This contest based on frequency only.

†Contest period January 1 to June 30.

Note: In all contests prior to 1932-33, the Standard Scale of Time Charges was not used for deaths, permanent total disabilities and permanent partial disabilities. Only one-sixth (1/6) of the scale charge for specific injuries was used. On July 1, 1932, the Standard Scale was adopted. This explains why the 1932-33 and 1933-34 severity rate is considerably higher than for other years.

DIVISION I

Group A

Rank 1 (Trophy)—Hollingsworth & Whitney Co. (Algonquin & Taconnet), Waterville, Maine.

Rank 2 (Certificate)—Bryant Paper Co., Kalamazoo, Mich.

Rank 3 (Certificate) — Anglo-Newfoundland Development Co., Ltd., Grand Falls, Newfoundland.

Group B

Rank 1 (Trophy) — Kimberly-Clark Corporation (Badger-Globe), Neenah, Wisconsin.

Rank 2 (Certificate)—St. Croix Paper Company, Woodland, Maine.

Rank 3 (Certificate) — Fraser Paper Limited, Madawaska, Maine.

Group C

Rank 1 Perfect Score (Trophy)—International Paper Co., Little Island, North Tonawanda, N. Y.

Rank 1 Perfect Score (Trophy)—Continental Paper & Bag Corp., York Haven, Pa.

Rank 2 (Certificate)—Finch Pruyn & Company, Glens Falls, N. Y.

Group D

Rank 1 Perfect Score (Trophy)—The Harriman Company, Harriman, Tenn.

Rank 1 Perfect Score (Trophy)—International Paper Company (Webster), Orono, Maine.

Rank 1 Perfect Score (Trophy)—Bird & Son, Inc., Phillipsdale, R. I.

Rank 1 Perfect Score (Trophy)—Hollingsworth & Whitney Company, (Aroostook & Cobbossee), Gardiner, Maine.

Rank 1 Perfect Score (Trophy) — United States Gypsum Company, North Kansas City, Mo.

Rank 1 Perfect Score (Trophy)—Central Fibre Products Company, Inc., Vincennes, Ind.

Rank 1 Perfect Score (Trophy) — Spaulding Fibre Company, Inc., Milton, N. H.

Rank 1 Perfect Score (Trophy) — Hollingsworth & Whitney Company (Abenaquis), Madison, Maine.

DIVISION II
(Re-Manufacturing Group)

Rank 1 Perfect Score (Trophy) — Union Bag & Paper Corp. (Grocers), Hudson Falls, N. Y.

Rank 1 Perfect Score (Trophy)—Kimberly-Clark Corp. (Atlas), Appleton, Wis.

Rank 1 Perfect Score (Trophy) — Texas Corrugated Box Company, Dallas, Texas.

The Paper Industry Trophy

On behalf of Edward B. Fritz, publisher of THE PAPER INDUSTRY, Chicago, who was unable to be present, Mr. Dowd awarded Mr. Fritz's major trophy to the mill which the judges decided had made the best record based upon (1) Frequency; (2) Man-hours worked; (3) Physical conditions, and (4) Other outstanding factors.

The award was made to the Algonquin & Taconnet mills of Hollingsworth & Whitney Co., Waterville, Maine. Their record in Group A covered 2,719,530 man-hours, averaging 1,244 employees for the period of the Contest, and one disabling injury was experienced on June 7, 1936. Their frequency rate was .368. The mills had operated up to that time since March 30, 1935, without a lost-time accident, a little more than fourteen months, or 3,343,623 safe man-hours.

The trophy was accepted by Arthur E. Winslow, manager of personnel, Hollingsworth & Whitney Co., who seemed very proud to be the bearer of this award to the mill employees for their marvelous achievement.

Panel Discussion on Paper Mill Safety

The program of the final session on Thursday morning was a panel discussion on Paper Mill Safety, led by E. E. Grant, vice-president, The Crystal Tissue Co., Middletown, Ohio. Participants were as follows: G. J. Adams, industrial supervisor, International Paper Co., Glens Falls, N. Y.; Ernest Augustus, safety director, Mead Paper Corporation, Chillicothe, Ohio; D. B. Chant, secretary-engineer, The Ontario Pulp and Paper Makers' Safety Association, Toronto, Ont., Canada; W. A. Gleason, safety director, Hammermill Paper Co., Erie, Pa.; F. A. Robinson, superintendent of operating division, Industrial Relations Dept., Kimberly-Clark Corp., Neenah, Wis.; A. E. Winslow, manager of personnel, Hollingsworth & Whitney Co., Waterville, Maine.

This form was an innovation this year on the Paper and Pulp program. It was admitted that the questions were much too general for any specific discussion. However, without any preparation, but with some apologies, the panel waded in and managed to spend nearly the entire allotted time in "agreeing" on the answers to the following questions:

1—What Are Your Outstanding Mill Hazards, and What Has Been Done to Eliminate Them?

2—What Are Your Initial Steps in Attempting to Correct Unsafe Practices?

3—What Methods Do You Employ to Maintain Safety Among the Personnel?

4—What Disciplinary Measures Are Enforced in Your Mill? By Whom? How?

5—If You Were Chief Executive of a Mill and Wanted to Undertake Just One Safety Activity, What Would You Select? Why?

No attempt was made to summarize the replies.

◆ Structure of the Raw Material Supply

About 80 per cent of the raw material for the manufacture of cellulose and paper is wood, and almost exclusively pine. Germany's total requirements of wood are on the average about 142 million standards, of which only about 118 million standards are covered by her own production. In 1935 the wood required for paper-making was 45.38 million standards, whereas only about 10 per cent of Germany's own total production was used in the paper industry, so that considerable quantities had to be imported. In 1935 the quantity imported for that purpose was 2.82 million tons, a result materially influenced by the imports of the preceding year, amounting to 3.02 million tons. The imports are 560,000 tons higher than in 1928, or nearly 30 per cent. Efforts to reduce the dependence of the raw material supply on imports are being carried out on a large scale. In connection therewith may be mentioned the plans for increasing the production of cellulose from the fir, from which at present sodium cellulose is manufactured as a substitute for jute. On the results of these efforts will depend whether new paper factories are to be established in the near future based on firwood. From the autumn of this year onward there will be a certain extension of the basis of production by starting the manufacture of artificial staple fibre from beechwood. Though cellulose is an article of export in Germany, considerable quantities have to be imported owing to the geographical situation of the paper factories. These imported quantities are either special sorts of cellulose not produced in the country, or cellulose which could be transported to the factories from the home producing centres only by incuring fairly heavy costs of carriage. Though the paper industry obtains nearly half its chief raw material, namely wood, from abroad, and also has to depend on imports to some extent for its cellulose on account of the geographical situation of the paper factories, the foreign trade balance sheet of the paper trade is constantly favorable. Dr. v. M.

(Reprint from *Bulletin of the Hamburg World Economic Archives.)*

◆ DR. SAMUEL MONTGOMERY KINTNER, vice president in charge of engineering, of the Westinghouse Electric and Manufacturing Company, who was internationally known in the engineering world for his research work and pioneering in the development of radio communication and broadcasting, died at his home in Pittsburgh, Pa., Monday morning, September 28th.

◆ THE MINE SAFETY APPLIANCES CO., Pittsburgh, Pa., announces that William P. Yant, formerly superintendent of the Pittsburgh Experiment Station and chief chemist of the health division of the U. S. Bureau of Mines, has become associated with that company as Director of Research.

◆ N. Y.-Canadian Div. Supers Fall Meeting

The regular fall meeting of the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association will be held in the General Brook Hotel, Niagara Falls, Ontario, Saturday, October 24.

Registration will take place Friday evening, the 23rd, which will make it possible to start the sessions on Saturday morning on time.

A number of interesting papers are scheduled, but subjects have not as yet been announced. There will be luncheon Saturday noon followed by a golf tournament. In the evening, there will be a dinner dance at the hotel.

The plants of the International Paper Co., Niagara Falls, N. Y., and the Niagara Wire Weaving Company, Niagara Falls, Ontario, will be open to any of those who desire to make mill visits.

◆ FRED H. LEUDERS, well-known salesman of paper-cutting equipment for Harris-Seybold-Potter Company, Cleveland, Ohio, passed away suddenly September 22 at Cincinnati, Ohio.

◆ Dr. Bruno Lange Will Tour America

Dr. Bruno Lange, eminent physicist and member of the Kaiser Wilhelm Institute in Berlin, who succeeded in 1926 in transforming energy from the sun directly into electricity, recently arrived in New York and will make an extended lecture tour of this country.

The so-called "photo-effect" is based on the principle of electron emanation by certain metals under the influence of light rays. Thus a copper plate, coated with cuprous oxide generates weak electric currents when exposed to ordinary daylight. By stepping up the effects of the cuprous oxide cell fifty times, he succeeded in driving a small electrometer and in lighting up electric filament bulbs.

Dr. Lange's engagements embrace a number of lectures on "Photo-Electric Cells and their Applications" before members of the American Chemical Society's branches in various cities, the Philosophical Society of Washington, and several well-known universities and colleges.

While in this country, Dr. Lange will make his headquarters with his American representatives, Pfaltz & Bauer, Inc., located in the Empire State Building, New York City.

◆ Fireproofing With Salts

Walls and floors of lumber treated with incombustible salts have been found to stop fires, confining the flames to the original point. The fire-proof qualities endure throughout the lifetime of the wood, and paint and varnish may be used on woods so treated. Fireproofed floors subjected to intense heat come out blackened and charred on the exposed surface, but unharmed otherwise. (From *Chemical Industries.)*

◆ A NEW ENGLAND office, staffed for consulting and sales engineering service to those having problems of instrumentation in manufacturing processes, laboratories, power plants or educational institutions, has been opened recently in Boston by Leeds & Northrup Company. Their complete line of measuring, recording and controlling instruments, as well as their electric heat-treating furnaces, will be handled through this office. The address is 422 Chamber of Commerce Building, 80 Federal Street, Boston, Mass.

◆ J. D. MALCOLMSON, of Robert Gair Company, Inc., has been appointed by the United States Bureau of Standards, Department of Agriculture, Chairman of the Simplified Practice Committee to standardize boxboard calipers.

◆ BRYANT PAPER COMPANY, Kalamazoo, Mich., announces the recent opening of an additional sales office in Cincinnati, Ohio. The office will be under the direction of George O. Comfort, who has been with the company for a number of years.

◆ Forest Boundaries in Constant Change

"For 300 years the forest map of our country has been changing. The boundaries of our forests have never remained fixed and they are not fixed today," says Dr. Joseph S. Illick of the New York State College of Forestry at Syracuse University.

"The use of land has been continuously different and in most regions there has also been a steady shift in land ownership. Fifty to seventy-five years ago our federal government was doing an enormous land office business. Then land was being transferred from public to private ownership. Now the pendulum is swinging in the opposite direction and the federal government is buying back much of the land it formerly sold or gave away. Millions of acres of abandoned farmland and tax delinquent forest land are finding their way back into federal, state and county ownership. The present day land shift is definitely away from agriculture and towards forestry.

"Even within the forest itself there is a continuous shift in land use," declares Dr. Illick. 'On some areas the shift is from wood production to grazing, hunting, fishing or recreation, and on others from fur farming to water conservation or from blueberry culture to wild life conservation. In practically every forest region one can find plenty of examples of changes in land use. Some of these changes have resulted in betterment and others in detriment. On the whole, however, changes are normal and necessary, but unfortunately many land shifts in the past were based on selfish propaganda, wild guesses and uncontrolled enthusiasm. The present trend is definitely away from guesswork in land use toward an intelligently planned and well-directed program of land untilization."

Paper Production and Sales Ahead of Year Ago

The information on this page is quoted from a survey of the paper industry recently published by DUN & BRADSTREET, INC.—*Editor's Note.*

UNIFORMITY of gains, which were disturbed little by the usual seasonal influences during the Summer, extended improvement in the paper industry during the first eight months of 1936. Increases in production from the corresponding 1935 tonnage ranged from 10 to as high as 25 per cent, and some divisions were only a small percentage under the 1929 peak for the period. For wholesale distribution the average was 12 to 18 per cent, the largest volume recorded since 1930, as buying was active all Summer, and Fall orders were placed nearly a month earlier than last year.

Steady widening of the demand base has occurred since the close of the first quarter, and the number of paper consumers has been multiplied. The rise in newsprint production, which for the United States and Canada was up 11.9 per cent from the seven-month total of 1935, and exceeded all previous periods to 1929, has brought the estimated world production for 1936 to 4 to 6 per cent over the 7,628,000 short tons produced in 1935. Exports of paper and products were 12 per cent more than in the first six months of 1935, the largest half-year total since 1931.

While there has been a little shading on some items, influenced by local competitive conditions, the price structure generally has remained firm, with advances indicated. Orders for new equipment have mounted since March, due to extensive paper mill repairs and improvements. The obsolescence factor has been an obstacle to progress during the last two years, due to the almost complete absence of replacement outlays since 1929.

Tonnage Output Heavier

Output in the paper industry gained steadily during the Summer, with most divisions reaching the year's peak in June or July. Some of the Wisconsin mills curtailed schedules during August, because of the water shortage, but in other sections of the country the customary Summer shutdowns were skipped. Due largely to the rise since March, production for the first eight months of 1936 went from 10 to 15 per cent in tonnage and 15 to 18 per cent in dollar volume over the comparative 1935 figures.

Much of this increase was furnished by the producers of kraft paper, wrapping paper, and paper bags, whose output was up 20 to 25 per cent from last year's. Gains in the fine paper division have started to widen in keeping with the increase in advertising campaigns scheduled for Fall. Most of the book mills set operations ahead early in August. For thirteen consecutive months the combined production of newsprint in United States and Canadian mills has been maintained above that of the year preceding.

July marked the third successive time that Canadian newsprint production established a new high for any month in the history of the industry. As production in the United States mills failed to follow this uptrend, the combined total for the two countries for the first seven months of 1936 of 2,297,390 tons failed to set a new record, as it was 2.2 per cent under the 1929 peak of 2,348,286. It was 11.9 per cent larger, however, than in 1935.

Wholesale Volume Larger

Gaining momentum rapidly since April, wholesale paper volume for the first eight months of 1936 averaged from 12 to 18 per cent larger than that for the corresponding 1935 period. For July and August, some wholesalers reported increases up to 25 to 35 per cent, although these usually are quiet months. Buying was at a good rate all during the Summer, and in most branches of the trade the customary seasonal recession was entirely absent.

Allowing for the normal downtrend of orders during the fourth quarter, it is estimated that wholesale volume for the year will run to approximately $465,000,000, or a gain of about 12 per cent over the $415,000,000 reported by the Department of Commerce for 1935. Distribution has been featured by package paper, wrappings, and all grades suitable for industrial use. Stationery, commercial bonds, and the finer advertising papers bolstered the volume.

Little fluctuation has marked the upward trend of orders for building paper since March. Paper bag business was good and the box board market improved. Both cardboards and blotting paper moved out in larger quantities than last year, and most of the rag papers sold well. The widest increases continued to be reported for the kraft division. Insistent demand for Summer specialties built up the best volume for any comparative season since 1929.

Price Increases Expected

Excepting for a few minor fluctuations, prices have been firm, the steadiness extending to all grades. It is the general consensus, however, that mark-up of a substantial percentage will be made before the end of the Fall selling season, because of the narrowed margin of profit, due to increased production and distribution costs.

Kraft paper, kraft liner board, and paper bag prices were increased about 10 per cent in April, but as these were offset by higher production costs, no gain in profit percentages resulted. Book paper prices became more stable and wrapping paper continued steady. Some grades of fine paper were marked up late in June.

Instead of the higher mark-up indicated, the price of newsprint for 1937 has been set by both United States and Canadian producers at $42.50 a ton. This is an increase of $1.50 a ton over the 1936 quotation of $41, which was the first advance since April, 1933, when it was lowered to $40 from $45. The 1938 price is expected to be $50.

Failures Under 1935

For both bankruptcies and 77-B cases, the totals for the seven months of 1936 were below those of the year preceding. Only two manufacturers of paper, both in Wisconsin, were listed under the 77-B cases during the period, which compared with 12 for the full year of 1935. Since June 7, 1934, when Section 77-B of the New Bankruptcy Act became effective, a total of 20 applications has been filed. All of these were by manufacturers.

Contrary to the situation in 1935, when the failure trend in the paper industry was upward, because of the increase in the wholesalers' and retailers' group, the latter showed the largest reduction this year. The number for the seven-month period was only 8, as against 24 for the twelve months of 1935. For manufacturers the total was 4, compared with 6 a year ago.

The complete insolvency record of the paper industry from 1927 to July, 1936, inclusive, as compiled by DUN & BRADSTREET, INC., shows:

Paper Manufacturers

Year	Number	Liabilities
1927	5	$2,017,000
1928	5	816,900
1929	10	1,929,200
1930	3	821,226
1931	1	800,000
1932	9	2,613,450
1933	10	1,944,189
1934	8	892,529
1935	6	603,314
1936*	4	94,583

(*) January to July, inclusive.

These statistics of commercial failures are exclusive of applications under Section 77-B. From June 7, 1934, when Section 77-B of the New Bankruptcy Act became effective, to August 20, 1936, applications were filed under this section by 20 manufacturers in this industry and by no wholesalers or retailers.

Glass Blocks Used in New Corrugated Container Factory

Night view of entrance facade, showing tall recessed shafts of glass blocks

SCIENTIFIC principles have been followed in the construction of the corrugated container factory and warehouse recently completed for the Owens-Illinois Glass Company at Gas City, Indiana. Six hundred and ninety tons of steel have been used in the structure which has been built by The Austin Company. It is of steel frame and brick construction, with glass block supplanting windows. The block allows 87 per cent light penetration and acts as insulation against summer heat and winter cold, with the result that comfortable working conditions are easily and economically maintained throughout the plant.

The plant has been built to accommodate large stores of roll paper and the fabrication of this material into corrugated board and cartons for packing glass containers. Straight line facilities carry through the four functions of the building; paper handling and storage; corrugated board and box manufacture; warehousing and shipping.

Roll paper delivered by freight cars to a siding installed along the west side of the building is unloaded into the roll storage area which occupies the south end of the building. With the aid of a 5-ton electric traveling crane (Whiting), the rolls are placed in sections designated for paper of each given weight and quality. As many as 1250 rolls of 72-inch width, weighing two tons each, can be stored in this area at one time, and a special reinforced concrete floor slab, testing for a load of 3000 pounds per square foot, has been provided. The room is also equipped with roll stops and the walls are reinforced with heavy steel beams for lateral thrust. Each of these members is set vertically and is anchored to two 1 in. x 18 in. anchor bolts and riveted to a spandrel beam which stands 12 ft. above the floor level.

The roll storage room, 204 feet long and 72 feet wide, has no intermediate columns and is spanned by welded steel trusses completely fabricated in The Austin Co.'s Cleveland shops. The crane operates over this entire area on crane rails set 37 feet above the floor, and transfers rolls from storage to the production line over a 10-foot second story balcony, extending 135 feet along the east side of this lofty storage room.

Eleven sets of narrow gauge track, set crosswise in the balcony and a 25-foot gallery alongside it, are equipped with dollies which receive roll paper from the crane and carry it to the primary feed machines in the corrugating line. This extends north along the gallery and paper passes through corrugating presses, pasters, a 75-foot drying oven and into cut-off shears, which slice the finished board to the desired lengths.

Continuing in the same straight line, the board passes through printing presses, slotting and scoring machines, and over folding tables to automatic machines which seal the box joints. Then the boxes move out on an automatic conveyor to tables where interior partitions are set in by hand. Ready for filling, they are then dropped on to a gravity conveyor which carries them to the ground floor for transfer either to the adjoining bottle plant where they are filled, or for shipment by rail or truck to one of the other middle-western plants of the company.

An office for the box factory superintendent and clerical employees, with glass block partitions, stands at the point where the narrow gallery opens out into the main manufacturing area, which extends across the full width of the building and measures 337 ft., 6 in. in length. Columns spaced at 22 ft., 6 in. intervals down the center of the second floor support the roof over this section.

The bottle storage area, located on the first floor, directly below the box manufacturing layout, has been divided into bays by removable shapes and is equally accessible from the railroad siding along the west side of the building and the truck loading dock on the east. Kalman floors have been installed along the passages separating the storage bays, to withstand the steady wear from industrial trucks required to transport cartoned bottles to and from storage. A spandrel beam has been placed in this section of the building at a height of 9 feet, to permit the ultimate installation of a mezzanine for storage when necessary.

As the building stands, there is some flexibility in bottle storage capacity. Roll stops can be shifted into alternate sleeves set in the concrete floor slab, to confine the roll paper storage floor and allow the use of all the space below

More than 42,000 glass bricks in the panels of this factory and warehouse admit glareless daylight along the corrugating and box production line

Wall sections of glass blocks permit daylight conditions in this storage area. As many as 1260 rolls of paper weighing 2 to 2½ tons each can be stored at one time

balcony and gallery for bottle storage, as the occasion demands.

A paper baler, installed in a central position underneath the manufacturing floor, occupies a room 24 ft. x 31 ft. in the middle of the bottle storage area, and draws paper scrap from the waste trim cutter in the corrugating line through a 10-inch duct. This duct also has a ventilating function and is connected with an exhaust air duct. Other scrap is conveyed to the baler through floor slots which empty into conveyor troughs.

Paste required for production of the corrugated board and boxes is pumped under pressure from three 10,000 gallon tanks situated in a special concrete basement direct to the machines on the second floor, and circulates through direct return lines. The basement, 67 ft. x 25 ft. and 18 ft. high, includes a huge silicate storage pit and dissolver where the company can make its own silica glue. The basement extends alongside the railroad siding where prepared pastes or silicates can be unloaded directly into the storage tanks or bins.

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Baler Room Equipment

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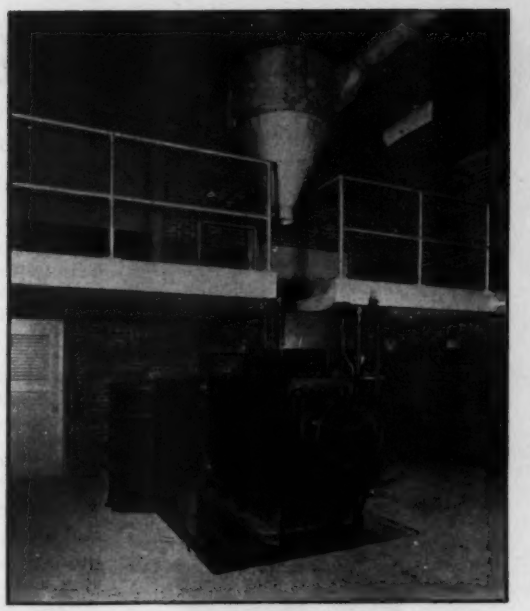
(Photos courtesy The Austin Co.)



New Pulp Binder Demonstrated

KIRBY TORRANCE
Highway Research Editor, Rainier Pulp & Paper Co.

WASHINGTON'S newest forest product, the lignin road binder manufactured at the Shelton Pulp Mill, was applied on a total of 750 miles of unpaved roads and pavement shoulders in Washington, New Jersey and British Columbia during the quarterly period that ended August 31, it was revealed in the report of Elmer B. Westlund, supervising engineer for Raylig Division of Rainier Pulp and Paper Company.

More than 3,000,000 gallons of the new product, manufactured from the liquor residue of rayon pulp, was thus applied during the first three months of business, with the month of July taking 150,000 gallons more than was scheduled for production, the report states.

Largest single user was the New Jersey State Highway Department, which purchased 900,000 gallons of raylig for application on 330 miles of pavement shoulders and unpaved surfaces between Perth Amboy and Atlantic City. Treatment of the New Jersey project was completed last week.

King County, including Seattle, was the second largest user, having applied in excess of 700,000 gallons of the concentrated solution to date, for treatment of more than 300 miles of roads and streets. Two hundred miles have been treated in the south district, along with 1,000 miles remaining to be treated, according to Jack Taylor, Commissioner.

Other communities that have used appreciable amounts, according to Westlund, include Kitsap County, where Commissioner W. S. Scott has treated 40 miles of streets; Mason County, with 60 miles of raylig-treated roads, Walla Walla, Cashmere and Lewis, Lincoln, Douglas, Pierce, Thurston and Stevenson Counties, Washington.

British Columbia has used raylig road binder on numerous projects, among which is the scenic Grouse Mountain Highway, near Vancouver.

Successful and widespread use of the new binder in Eastern Washington has led to the projecting of 150 miles of raylig binder treatment for the fall months, the report states, with many districts preparing to undertake comprehensive soil stabilization and dust control programs in the Spring.—(From September 18th issue of *The Union*)

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◆ Additional Pulp Mill for British Columbia

An item in *Side Runs of the Paper Trade*, published by the Department of Commerce states that a saw mill and pulp mill at Port Mellon, British Columbia have been leased by Portland (Oregon) interests, according to a recent report from Vice Consul Nelson P. Meeks, Vancouver, B. C.

The original plant was constructed nearly 25 years ago by the Howe Sound Pulp and Wood Company. Change in the ownership of the plant was frequent until 1929 when the Vancouver Kraft Company acquired the property and undertook extensive development work costing approximately $1,500,000. This work included the construction of modern houses for employees, a dock 600 feet long, a sawmill with a daily capacity of 600,000 board feet per eight hour shift and the installation of a sprinkler system.

When the plant was rebuilt in 1929, it was anticipated that the company would employ approximately 400 men. The price for kraft paper in world markets, however, declined substantially about that time and the owners decided to postpone operations until conditions improved. Although the plant has been idle for seven years the machinery has been taken well care of and is now in good condition.

It is reported the new lessees will make a capital expenditure of nearly $2,000,000 and that the kraft pulp manufactured here will be shipped to the United States.

◆ Mead Plans Pulp and Paper Mill in Georgia

Another project in the rapidly developing southern territory is the announcement of a $7,000,000 plant to be built by the Mead Corporation at Brunswick, Georgia. This plant will be managed and operated by the company's newly organized subsidiary, the Brunswick Pulp and Paper Company, a corporation.

The entire plan calls for both a pulp mill and a paper mill. Slash pine will be used to manufacture both bleached and unbleached pulp, and it is claimed the new pulp mill, when finally completed, will be the largest pulp mill in the south. From this pulp, book and stationery and other better-grade papers will be made.

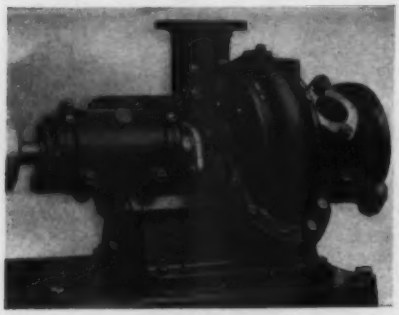
The plant will be located on a tract of 200 acres of marsh land, bordering Turtle River, just outside the city of Brunswick. The site is now being reclaimed and it is expected that within the next few weeks construction proper will begin.

The first unit to be constructed will be one unit of the pulp mill, the output of which will be shipped to other plants of the Mead Corporation until the entire plant is completed.

It is understood that the new company has not acquired any timber properties, but will secure its supply from timber owners in the piney woods section of Southern Georgia.

◆ Paper Machine Head Box Pump

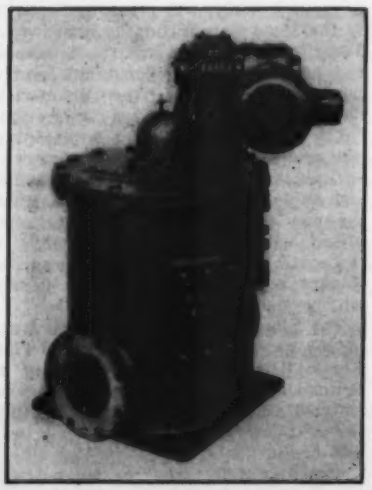
Allis-Chalmers Mfg. Company, Milwaukee, Wis., has developed a specially designed paper stock pump for use in supplying stock to the paper machine head box. This pump is of the centrif-



ugal, open impeller type with an impeller of such characteristics that there is little change in capacity for such change in head as is encountered in this service.

◆ Automatic Self-Cleaning Strainer

H. A. Brassert & Co., 310 S. Michigan Ave., Chicago, has developed a strainer for the continuous and automatic removal of suspended solids from liquids. This strainer, known as the Brassert automatic strainer, consists essentially of hollow, cone-shaped, perforated cylinder that is inverted and which revolves slowly within a cast iron housing. The perforated areas in the cylinder contain the filtering elements which ordinarily are in the form of porcelain plates. These plates are glazed on one side, are ¼ in. thick, and contain either 1/16, 1/32, or 1/64-in. holes. The plates with the



1/16-in. holes have a free area of 25 per cent; the plates with the 1/32-in. holes, 22½ per cent; and the plates with 1/64-in. holes, 13½ per cent.

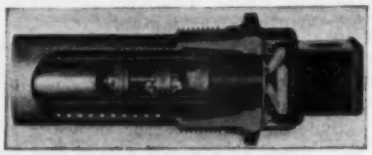
Water or other liquid, entering the machine through an inlet at the bottom, rises between the inside of the casing and the outside of the filtering cylinder and passes to the interior of the cylinder through the openings in the porcelain discs. The clear water or other liquid from the interior of the cylinder is then discharged through an outlet at the bottom of the casing and opposite the inlet opening. Approximately 5 per cent of the filtered material is employed to clean the straining media. This cleaning takes place continuously and automatically.

The strainer is claimed to be particularly well suited for applications where the percentage of foreign matter in the water is high and the volume of liquid to be handled is large. It is suggested not only for water filtration purposes in pulp and paper mills, but likewise for certain white water recovery applications and other filtering operations where the nature of the design permits it to operate satisfactorily.

◆ Liquid Level Float-Switch

A simple float-operated switch for the checking or control of liquid levels has been developed by McDonnell & Miller, Wrigley Bldg., Chicago.

Inside the float and attached to the float head through a flexible metallic bellows is a mercury switch which



makes and breaks contact as the float moves through its arc.

A device of similar design, but equipped with a three-wire switch, makes one circuit and breaks another as the float is moved by a rising or falling liquid level.

One model of the switch screws directly into tank or vat; another is built with a float chamber with tappings for equalizing pipe connections to tank or vessel; while a third design is made for convenient installation in gauge glass tappings of a tank or boiler.

◆ Anti-Friction Bearing Truck Casters

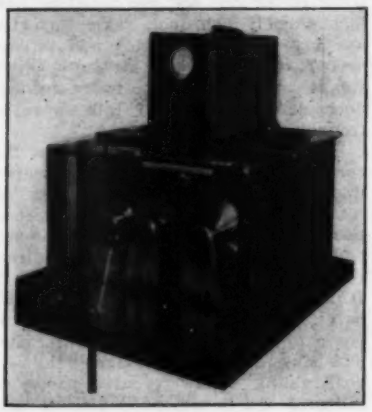
A new line of anti-friction bearing truck casters has been placed on the market by The Bond Foundry and Machine Company, Manheim, Pa. Hyatt roller bearings are used as standard equipment in these new units.

◆ Gear Noises Made Visible

The Synthane Corporation, Oakes, Pa., manufacturers of laminated Bakelite sheets, rods, tubes and gear materials, has developed a device to make visible the difference in gear noises between laminated Bakelite gears and metal gears.

This device, known as the Noisometer, consists essentially of a cathode ray oscillograph and a train of spur gears. The gear train is so arranged that through a gear shift lever either a Bakelite gear or a steel gear can be thrown in mesh in the intermediate position. Driver and driven gears are steel.

Although a comparison of noises can be quickly made by ear, a more accurate graphic comparison can be made by eye at the same time. A microphone

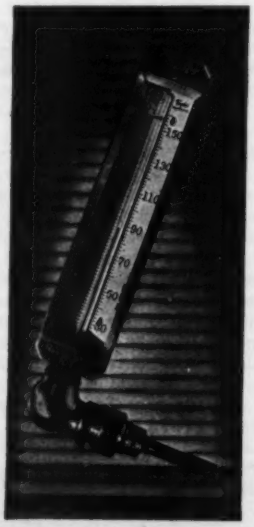


located on a panel behind the gears picks up the noises generated by the gears and relays them to the cathode ray oscillograph.

The volume of noise is represented by the height of the wave or amplitude of a pale green line that is reproduced on the screen of the cathode ray tube.

◆ Easy Reading Mercury-in-Glass Thermometer

The Taylor Instrument Companies, Rochester, N. Y. have announced the development of an easy reading mercury-in-glass industrial thermometer. This thermometer, available in straight,

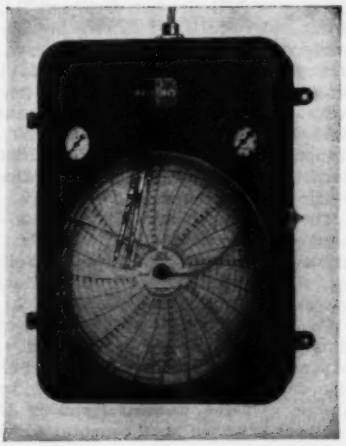


angle and handled forms, utilizes a new thermometer tubing in its construction. This tubing, known as Binoc, is said to give the design more than twice the accustomed angle of vision together with magnification of the mercury column. It also is stated to permit readability with both eyes at normal or greater than normal distances. The legibility of

the thermometer is further improved through the use of bold, black numerals and graduations on a cream-tinted, non-tarnishing scale.

◆ New Line of Controllers

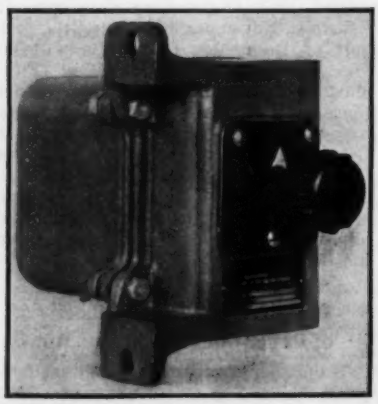
A new line of controllers, known as Master Free-Vane controllers, are being offered by The Bristol Company, Waterbury, Conn., primarily for temperature, time-temperature, flow, liquid level, pres-



sure, time-pressure, and humidity applications where a greatly reduced sensitivity is required and the load conditions fluctuate over a wide range. These controllers are of the pneumatic type; operate on Bristol's Free-Vane principle of control; and they are equipped individually with a sensitivity adjustment, an automatic reset and accessory features.

◆ Transfer and Control Switches

A series of new developments which have been incorporated in Type SB-1 transfer and control switches have been announced by the General Electric Company, Schenectady, N. Y. The new features include electrically separate sta-



tionary contacts, large escutcheon, water- and oil-tight housing, and removable handle. A suitable key and slot arrangement prevent removal of the handle unless switch is in proper position to permit the operation.

◆ Pipe Size Selector Rule

An easily operated slide rule which permits ready calculation of pipe sizes as commonly employed in the handling of water and steam has been designed by the J. O. Ross Engineering Corporation. The development of the rule was prompted by the need for it in their own engineering organization and the lay-out of the rule followed only after a careful survey of the printed literature in books and magazine articles and after studying some test data which is not so commonly known.

It is a rule that should be in the hands of every paper mill engineer or operating man who has anything to do with the selection of pipe sizes for handling the materials for which the rule is designed.

Complete information regarding the rule may be obtained from the J. O. Ross Engineering Corporation, 350 Madison Avenue, New York, or from any of its district offices.

◆ 1000-Watt Lamp Smaller

The Westinghouse Lamp Company, Bloomfield, N. J., has announced radical changes in the design of its 1000-watt Mazda lamp. The new lamp, designed for base-up burning only, has an inside-frosted, tubular-shaped Pyrex bulb of

about one-half the size of a regular 1000-watt lamp, and a base of bi-post construction. In addition, there are two wire meshes, each about 1½ inches square, that are attached to the lead-in wires just above the filament when the lamp is in its correct burning position of base-up. These meshes collect and localize tungsten blackening and assure higher lumen output throughout the operating life of the lamp.

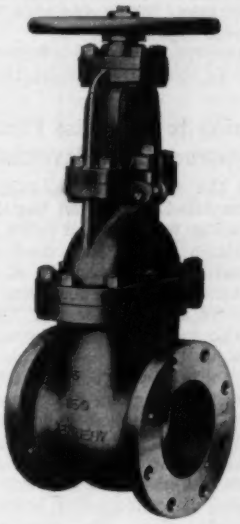
The new bi-post lamp is designed for 110, 115 and 120 volt service; has a maximum overall length of 9½ in.; a light center length of 5½ in.; and a rated life of 1000 hours.

◆ Iron-Body Wedge Gate Valve

The Kennedy Valve Manufacturing Company, Elmira, New York, has announced the development of a new iron-body wedge gate valve in which several interesting features of design are incorporated.

The body is of oval section with well rounded corners. Flanges and bolts are heavy. Ribbing is provided at flanges on larger flanged-end units and at yokes and caps of outside-screw-and yoke units.

All bolts have nuts above the flanges. Heavy bronze bushings are used wher-



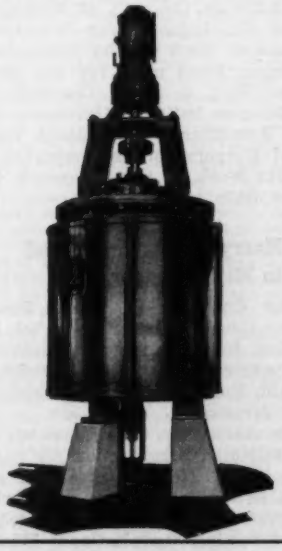
ever stem passes through a cast iron part, such as at yoke cap, packing gland, and stuffing box. Disc is reinforced with interior posts, is self-draining in any position, and is reversible and interchangeable. Handwheel rim is of oval section and spoke arrangement permits ample room for operator's hands even if gloved.

Special provisions to facilitate repacking and to keep stem in alignment are incorporated in the design.

The valve is made in all standard sizes from 1½" to 60" for steam working pressures of 150 lb. and for water working pressures of 200 lb.

◆ Electrically Heated Kettle

The Patterson Foundry & Machine Company of East Liverpool, Ohio, has announced a new line of kettles, the ket-



tle proper being cast of ordinary gray iron or chemical iron, or of alloys of various types.

These kettles are electrically heated and are equipped with Patterson Unipower Motor Drives and with stirrers of various types. They are also built in belt driven types.

The new line of kettles is built in sizes from 50 to 1000 gallons inclusive.

◆ Smiley to Supervise Further Construction at Savannah

With the first unit of its Savannah mill completed, the Union Bag & Paper Corporation will proceed with further construction there. The work will remain under the management of Merritt-Chapman & Scott Corporation, general contractors and engineers of New York City, who handled the construction of the first unit.

L. D. Smiley, who has been associated with Merritt-Chapman & Scott since August 15, 1936, has been placed in charge of construction activities at Savannah with the title of general superintendent.

Mr. Smiley has had a long and notable experience in construction management and engineering. He was formerly general superintendent of construction for Management Engineering & Development Company, Dayton, Ohio, and more recently with the Weston Paper Manufacturing Company, also of Dayton, as development engineer on straw pulp and paper products. While with Management Engineering & Development Company, Mr. Smiley had charge of construction of the plant of Fraser Company, Ltd., Madawaska, Maine, and of the groundwood mill and board plant at Edmundston, N. B.

Other engineering and construction projects of which Mr. Smiley had charge are: the sulphite mill of Fort William Paper Company, Fort William, Ontario; an addition to the plant of the Provincial Paper Company, Port Arthur, Ontario; the removal of two paper machines from the Tidewater Paper Company's plant in New York and their installation in the mill of Murray Bay Paper Co., Ltd., Murray Bay, Quebec; expansion work at the Espanola and Sturgeon Falls mills for the Spanish River Pulp & Paper Company. Mr. Smiley also built the Harriman, Tenn., and Lynchburg, Va., plants for the Mead Corporation and supervised extensive work at the company's Chillicothe, Ohio, plant.

◆ Harry Adrian Promoted to Mill Manager

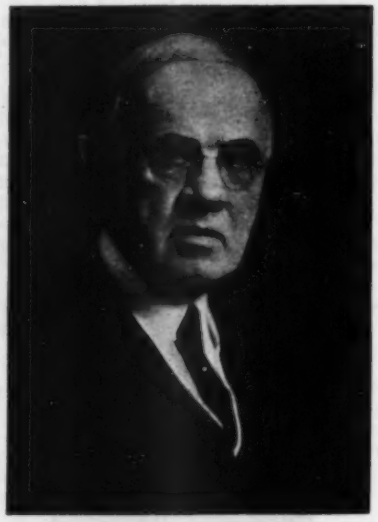
The Consolidated Water Power & Paper Company announces that Harry Adrian, formerly superintendent of the company's plant at Stevens Point, Wisconsin, has been made mill manager of that division.

Mr. Adrian has been a member of the Consolidated organization for the past four years. He has had a wide experience in the industry over a period of 25 years, having been associated with the following organizations: Wisconsin Tissue Paper Co., Appleton, Wis.; Thilmany Pulp & Paper Co., Kaukauna, Wis.; Paper Converting Corp. and Kimberly-Clark Corp., Niagara Falls, N. Y.; Detroit Sulphite Pulp & Paper Co., Detroit, Mich.; and Nekoosa Edwards Paper Company, Nekoosa, Wis.

◆ Emil A. Peterson

Emil A. Peterson, president and general manager of the Valley Iron Works Company, Appleton, Wis., passed away at his home in Appleton, September 13 following a short illness.

Mr. Peterson was 71 years of age. He was born at Landskronna, Sweden, and came to this country at the age of 17. Upon arriving in America he located in Appleton where he entered the employ of the Appleton Manufacturing



Company, builders of agricultural equipment. Several years later he left that company and went with the Prescott Company at Marinette, manufacturer of mining and logging machinery. In 1895 he returned to Appleton to become foreman of the Appleton Machine Company. In 1898 he was appointed general superintendent of the Valley Iron Works. Later the company was reorganized and "Company" added to the name. In 1904, Mr. Peterson was made treasurer and general manager of the Valley Iron Works Company and in 1921 became president, as well as general manager.

Surviving Mr. Peterson is his son, R. A. Peterson, who has been treasurer of the Valley Iron Works Company, for a number of years.

◆ Hadar Ortman President United Wall Paper

Hadar Ortman, for the last two years head of the W. F. Hall Printing Company of Chicago and for six years previously director of operations and finance of the Meredith Publishing Company, assumed office October 1 as president of the United Wall Paper Factories, Incorporated, largest wall paper concern in the country. At the same time, Rudolf Neuburger, former assistant to the president, who resigned as an executive of Atlas Powder Company last June, will take office as vice president and chairman of the Executive Committee. A. F. Kletzien, formerly secretary and controller of Fox River Paper Company, Appleton, Wis., becomes treasurer and controller.

New directors of United are Mr. Ortman, Mr. Neuburger and C. H. Sage. Other directors, re-elected at the annual meeting at Wilmington, Del., are R. B. Griffin, who continues as vice president in charge of design; J. M. Barker, J. S. McCoy, who retains the office of vice president which he has held for many years; E. J. Pollock, F. J. Sensenbrenner, Karl Panthen, William Shand, W. A. Huppuch, C. W. Kellogg, J. C. Eisenhart, and A. R. Palmer. Mr. Palmer continues as general counsel.

The company is consolidating its executive offices at Chicago. Plants are located in Jersey City, York, Pa., Joliet, Ill., and Appleton, Wis. Subsidiaries operate in England and Canada.

Mr. Ortman said he anticipated a continued increase in the demand for wall paper as a result of housing and building developments. For the last year and a half the upward trend in this business has been most pronounced with new designs and water-proofing augmenting public appeal.

◆ Dr. Lewis to Make Speaking Tour

Dr. Harry F. Lewis, Dean of the Institute of Paper Chemistry, will make a speaking tour in November and December to address section meetings of the American Chemical Society in the middle West and far West.

During the month of November he will appear before local sections of the Society in Indianapolis, Ind., Cincinnati, Ohio, Hamilton, Ohio, and at Purdue University at Lafayette, Ind. His subject will be fundamental developments in pulp and paper manufacture. At Purdue his speech will be largely concerned with engineering development.

Late in November and during the first half of December, Dr. Lewis will go West to speak at Bozeman, Mont., Pullman, Wash., and Portland, Ore. From there he will travel south to California to address sections of the Society at Leland Stanford, Palo Alto, and the California Institute of Technology, Los Angeles, Cal. Other speaking engagements in these regions will probably be added to his list before he commences his trips.

◆ Lester Wood Now Officer of Paper Converting Machine Co.

The Paper Converting Machine Company, Green Bay, Wis., announces that during the month of September the capital stock of the company was considerably increased to permit Lester G. Wood, formerly vice-president and assistant general manager of Northern Paper Mills, to purchase a substantial interest in the company. Mr. Wood be-

comes vice-president and treasurer, in charge of sales. Since 1921 Mr. Wood was associated with the Northern Paper Mills and prior to that time was in the wholesale paper business with Leslie-Donahower Paper Co. of St. Paul, Minn.

The association of Mr. Wood with the company is in line with the general idea of expansion and growth. It will enable a closer contact with customers and friends in the paper manufacturing and converting industry.

Mr. Wood's entry into the company will enable Peter J. Christman, one of the founders of the company, and associated with it continuously since its organization, to devote his entire time to design and production. Mr. Christman has designed and developed many of the outstanding paper converting machines now in use in paper mills and converting plants in all parts of the United States and Canada.

Byron L. Walter remains president and Fred W. Christman will continue as secretary of the company in charge of credits, accounts and general office supervision.

◆ H. R. TELFORD, who has been vice president in charge of sales for the Detroit Sulphite Pulp & Paper Company, Detroit, Mich., was elected president at the meeting of the Board of Directors on October 2. Mr. Telford succeeds J. M. Ward, who has resigned. Mr. Ward continues to act as a director of the company. He has not announced his future plans.

◆ T.A.P.P.I. Paper Bag Committee Organizes

Because of the growing importance of technology in the paper converting field the Technical Association of the Pulp and Paper Industry has organized a committee on Paper Bags. This is to be composed of Riley M. Bates, chairman, Thomas M. Royal & Company, Philadelphia; W. Noyes Baker, Bagpak Division of the International Paper Company, New York, N. Y.; T. M. Avery, vice president of the Union Bag & Paper Corporation, New York, N. Y.; C. M. Connor, Valley Forge Laboratories and the Glassine Paper Company, W. Conshohocken, Pa.

The T. A. P. P. I. Paper Bag Committee intends to consider the following subjects: (1.) General Requirements of Bag Papers—This subject will include standardization of paper specifications for the principal types of bags. (2.) The development of practical methods of testing paper bags.

Experience has shown that there are a great many fundamental problems confronting the bag industry which are directly connected with paper, and which may be partially or wholly solved by the efforts of men who are deeply and yet impartially interested in them.

Anyone interested in participating in the work of this committee should get in touch with R. G. Macdonald, Secretary of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd Street, New York, N. Y.

◆ New Catalogues and Publications

Bausch & Lomb Optical Co., Rochester, N. Y.—The first announcement of this company's new Paper Fiber Microscope is incorporated in a folder entitled "Optical Control for the Paper Technologist." There is a concise description of this new addition to the B&L line of instruments for the paper technologist, also specifications and illustrations.

Cleveland Crane & Engineering Co., Wickliffe, O.—"Cleveland Cranes" is the title given to a new catalogue just published by this company. The various types of cranes, girders, trolleys, etc., are covered in separate group chapters and the text is prepared from a descriptive and basic engineering standpoint, rather than mechanical detail and dimensions. The catalogue is profusely illustrated and is attractively bound.

Carpenter Steel Company, 347 Madison Ave., New York City—A very practical and convenient compilation of information and data on stainless tubing has been issued by this company. The material is contained in a cover with subject tab appended for vertical filing. This information will assist in applying welded stainless steel to individual needs. It is presented in desirable form for ready reference and is supplemented with facts on the properties of stainless alloys, the applications for stainless tubing and notes on corrosion. Among recommended uses for Carpenter Stainless No. 6 is mentioned "Used extensively in the manufacture and handling of nitric acid and for evaporator tubes in the concentration of black liquor (sodium sulphate) as used in the paper industry."

Cochrane Corporation, Philadelphia, Pa.—A new publication, No. 2059, describes the deaerating type of Cochrane Hot Process Water Softener. The method of operation and advantages of design are explained. There is a double-page diagram showing the water flow and steam flow. Illustrations show a number of softeners in operation.

Dayton Rubber Mfg. Co., Dayton, Ohio—"The ABC'S of V-Belts," which is this company's 1936 manual on its Cog-Belt Drives for industrial distributors, is having a wide distribution. The book contains 80 pages and is handled in primer fashion with plenty of pictures and with brief text in large type, combined with the illustrations. The second part points out markets for these drives. It shows over 200 pictures of a wide variety of actual installations, arranged alphabetically by industries.

Edge Moor Iron Works, 30 Rockefeller Plaza, New York City—This company's latest bulletin, No. 101, describes some of its fabricated process equipment in various metals. The subject of this bulletin is "Special Equipment for the Process Industries." There are a number of illustrations with descriptive captions. This bulletin, as well as a circular featuring Edge Moor Water Tube Boilers, will be sent upon request.

Glyco Products Co., Inc., 148 Lafayette St., New York City—A highly useful handbook featuring its line of chemicals as well as other valuable data has just been published by this company. The company's products now in commercial production are listed with their physical properties and suggested uses. One feature of the book is a section of "Useful Tables and Information." There is also a section devoted to Suggested Formulae for 29 different items.

Morse Chain Co., Ithaca, N. Y.—A new stock drive bulletin has just been issued featuring this company's stock list of sprockets, chains and couplings. The bulletin has 48 pages and cover, and contains descriptive material, dimensional and horsepower tables, a large number of illustrations and diagrams, and data on chain length computations. This is indeed a complete bulletin on the subject, presented in a concise though very attractive style.

Norton Company, Worcester, Mass.—An attractive brochure containing some interesting information on "Saw Sharpening & Knife Grinding in the Saw Mills," has just been sent out by this company. There are 14 pages and cover, with a number of good illustrations.

Patterson Foundry & Machine Co., East Liverpool, Ohio—"The Patterson Unipower Agitator" is featured in a new folder just received. The agitator is illustrated and its construction features are explained. There are specification tables, and also a short description of the Patterson Horizontal Unipower Drive.

Rockwood Manufacturing Co., 1801 English Ave., Indianapolis, Ind.—This company has just issued two new data books: No. 782 for Multiple Groove Drives, and No. 783 for Fractional Horsepower Single Groove Drives, covering a range from fractional to 500 horsepower. The data is presented in a simple manner which makes it easy to select a V-belt drive. These data books have been carefully compiled and are attractively bound with varnished covers. Copies on request.

Union Steam Pump Co., Battle Creek, Mich.—The first edition of Bulletin No. 95 is devoted to Union Centrifugal Stock Pumps, Class "SK." The features of construction and specifications are outlined and there are photographs and cross-sectional views. There are also illustrations of other paper mill pump installations.

BOOKS

Packaging, Packing & Shipping—This volume, published by the American Management Association, 330 W. 42nd St., New York, is a study of the packaging methods employed by representative American concerns manufacturing consumer and industrial goods. It contains material on 41 phases of the subject prepared by 37 authors. Sixty-four pages of illustrations graphically show packages that have won awards in the association's annual competition for distinctive merit in packaging. The book is a strikingly smart package itself, its cover having been designed by the well-known commercial artist, Jim Nash, whose design for the du Pont Five Star Anti-Freeze Container won the Irwin D. Wolf Award in the 1936 competition. Information may be obtained from the association's office in New York. The price of the book is $7.50.

Safety Code for Paper and Pulp Mills—This code has been approved by the American Standards Association, 29 W. 39th Street, New York City, and has been published by them. The Code was formulated by a special committee of national scope, organized under the leadership of the National Safety Council and functioning under the rules of procedure of the American Standards Association. It is a revision of the code previously approved by the American Standards Association in 1925, and is the result of extended and careful consideration of available knowledge and experience. Its use is recommended by manufacturers of machinery and equipment, operators of paper and pulp mills, and adoption is urged by administrative authorities. Copies may be ordered from the American Standards Association headquarters. Prices are scaled from 25 cents per copy up to ten copies to 8 cents per copy for 500 or over.

Production of Pressboard from Cornstalks—This pamphlet, emanating from the National Bureau of Standards, is designated as Misc. Publication M123 and is available from the U. S. Government Printing Office at Washington, D. C., for 5 cents per copy. The collaborators in the preparation of this material are: Baker Wingfield, T. R. Naffziger, E. R. Whittemore, C. B. Overman, O. R. Sweeney and S. F. Acree. The material takes up the research and experiments that have been carried on since 1927 when the subject was given wide publicity.

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◆ Twelfth National Power Show

Advancing to ride the crest of industrial purchasing power, Power Show exhibitors this year are establishing new methods to meet a new market. Calculating to take the tide when it is right, their presentations are being launched with care and skippered by a high type of personnel. This year's Power Show, known officially as the Twelfth National Exposition of Power and Mechanical Engineering, will be held in New York at Grand Central Palace, November 30 to December 5, 1936. Incentive to create outstanding exhibits is great because of the assured purchasing power of American industries and the increasing tendency of directorates to reinvest earnings in new plant equipment and in the reconditioning of equipment which has become obsolete during the quiet years. Advance indications of exhibit plans show that the various engineering and product displays, which will cover three floors of Grand Central Palace, will be geared to give the latest salient information in the briefest time. The storehouse of mechanical engineering achievement, which is fascinating even to the layman, will have a selected audience, because of the attendance registration policy which the management wisely has maintained.

Power plant operatives will be interested in the complete display of boiler meter, air-operated combustion controls, desuperheated controls, boiler room meters and gages. A complete line of metering and control equipment will be featured for steam power plants, including a combustion system which automatically maintains maximum combustion efficiency consistent with economical operation at all times. In addition, the instrument section will include a complete exhibit of draft gages, air-flow gages, pitot tubes, steam calorimeters and portable gas analyzers.

◆ Wm. R. Gibson now Associated with Hall Laboratory Representative

Kenneth Shibley, of Seattle, Washington, representing Hagan Corporation and Hall Laboratories, Inc., of Pittsburgh, Pa., specializing in combustion control and boiler water conditioning for steam power plants, has added to his staff William R. Gibson, who has had a wide experience in the water conditioning and engineering fields, especially in connection with the Pulp and Paper Industry.

As the representative of Hall Laboratories in the Pacific Northwest, Mr. Shibley has made available to scores of plants, including some of the finest paper mills on the Pacific Coast, the best knowledge that has been gained in recent years concerning the treatment of water in generating steam—particularly steam of good quality which is a necessity in the exacting processes of paper making.

◆ Import Committee Wins Decisions

A report by Warren B. Bullock, Manager of the Import Committee of the American Paper Industry, tells of several decisions by the United States Customs Court upholding the position taken by the paper industry on these shipments. Among the cases decided in favor of the American industry were the following:

An importation of paper in sheets 22 to 28 inches for the Boston Paperboard Company was held dutiable as printing paper, the court stating: "The burden of proving the fact that the paper in question was chiefly used for the printing of newspapers rested upon the plaintiffs, which obligation they failed to meet."

Printing paper in sheets 23 by 37 inches in size imported into San Juan, Puerto Rico, classified for duty as printing paper, claimed by importer to be duty free as standard newsprint. The paper was classified for duty because its sulphite pulp content was 50 per cent, and the court upheld this classification.

Filter paper imported at New York classified for duty at 35 per cent as paper cut into shapes, claimed by importer to be dutiable at 5 cents per pound and 15 per cent as tissue paper. The court upheld the appraiser's classification.

An importation of cardboard discs at Chicago was held by the Customs Court to be subject to an additional duty at 10 per cent for not being properly marked with the country of origin.

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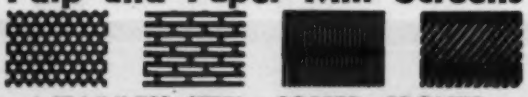
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July 1, 1936 to June 30, 1937

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	Container Corp. of America	Manayunk	Philadelphia, Pa.
GROUP B	Hoberg Paper Mills, Inc.	Hoberg Div.	Green Bay, Wis.
	St. Croix Paper Co.	Woodland	Maine
	Continental Paper & Bag Corp.	York Haven	Pennsylvania
GROUP C	Container Corp. of America	Coated Board Div.	Chicago, Ill.
	Strathmore Paper Co.	West Springfield	Massachusetts
	Crystal Tissue Co.	Middletown	Ohio
	Strathmore Paper Co.	Woronoco	Massachusetts
	Kimberly-Clark Corp.	Lakeview	Massachusetts
	Container Corp. of America	Circleville	Ohio
	Bedford Pulp & Paper Co., Inc.	Big Island	Virginia
GROUP D	Southern Extract Co.	Knoxville	Tennessee
	Bird & Son, Inc.	Phillipsdale	Rhode Island
	International Paper Co.	Webster	Orono, Maine
	American Asphalt Roof Corp.	East St. Louis	Illinois
	Central Fibre Prods. Co.	Tama	Iowa
	U. S. Envelope Co.	Morgan Paper Div.	Lititz, Pa.
	Flintkote Co.	Little Ferry	New Jersey
	International Paper Co.	Livermore Falls	Maine
	Consolidated Water Power & Paper Co.	Stevens Point	Wisconsin Rapids, Wis.
	U. S. Gypsum Co.	North Kansas City	Missouri
	Mead Paperboard Corp.	Nashville	Tennessee
	Hollingsworth & Whitney Co.	Aroostook & Cobbossee	Gardiner, Me.
	Rogers Fibre Co., Inc.	Fibreboard Mill	Bar Mills, Me.
	Spaulding Fibre Co., Inc.	Milton	New Hampshire
	International Paper Co.	Riley	Maine
	Wrenn Paper Co.	Middletown	Ohio
	Central Fibre Prods. Co.	Vincennes	Indiana
	Central Fibre Prods. Co.	Mt. Carmel	Illinois
	Hollingsworth & Whitney Co.	Abenaquis	Madison, Me.
	Division II		
	Union Bag & Paper Corp.	Specialty	Hudson Falls, N. Y.
	Container Corp. of America	35th Street	Chicago, Ill.
	New Orleans Corrugated Box Co.	Bogalusa	Louisiana
	Union Bag & Paper Corp.	Grocers	Hudson Falls, N. Y.
	Container Corp. of America	Anderson	Indiana
	Container Corp. of America	Natick	Massachusetts
	Kimberly-Clark Corp.	Atlas	Appleton, Wis.
	Texas Corrugated Box Co., Inc.	Dallas	Texas
	Bemis Bros. Bag Co.	East Pepperell	Massachusetts

IMPERFECT SCORES

	Key Number	Rank	Disabling Injuries	Frequency Rate
GROUP A	P- 28	3	1	1.287
	P-106	4	1	2.564
	P- 12	5	1	3.702
	P- 21	6	1	4.478
	P- 18	7	2	4.715
	P- 62	8	2	5.918
	P- 67	9	3	6.404
	P- 64	10	2	6.884
	P- 27	11	4	7.457
	P-101	12	2	7.673
	P-121	13	3	9.379
	P- 13	14	3	9.722
	P- 2	15	3	10.932
	P- 9	16	6	12.043
	P- 23	17	3	14.081
	P- 84	18	5	14.584
	P- 58	19	3	14.904
	P- 19	20	4	15.221
	P- 1	21	8	15.687
	P- 95	22	4	17.360
	P- 69	23	5	17.943
	P-107	24	4	19.698
	P- 30	25	6	19.988
	P-102	26	9	25.938
	P- 83	27	6	27.503
	P- 73	28	12	28.678
	P- 87	29	11	35.215
	P- 74	30	14	44.253
	P- 32	31	14	56.484
	P- 45	32	12	58.076
	P- 71	33	14	59.868
	P- 40	34	13	62.812
GROUP B	P- 25	4	1	5.190
	P- 22	5	1	5.194
	P- 11	6	1	5.710
	P- 26	7	1	5.842
	P- 68	8	1	5.910
	P-112	9	1	6.985
	P- 4	10	1	7.163
	P- 51	11	1	7.847
	P- 72	12	1	8.197
	P- 3	13	2	12.099
	P-100	14	1	13.392
	P- 70	15	3	16.468
	P-123	16	3	18.130
	P- 76	17	4	24.351
	P- 54	18	4	25.638
	P-124	19	6	40.377
	P-120	20	4	44.729
	P- 77	21	7	47.353
	P- 82	22	10	50.609
	P- 16	23	9	54.376
	P- 46	24	11	62.288
	P-122	25	11	75.436

	Key Number	Rank	Disabling Injuries	Frequency Rate
GROUP C	P- 59	8	1	8.493
	P- 75	9	1	8.694
	P- 55	10	1	8.866
	P- 37	11	1	9.965
	P- 56	12	1	11.052
	P- 17	13	1	13.098
	P- 94	14	1	15.792
	P- 29	15	2	18.825
	P- 61	16	2	20.680
	P- 47	17	3	31.806
	P- 43	18	3	40.618
	P- 34	19	3	40.896
	P-103	20	3	43.015
	P- 91	21	3	46.976
	P- 5	22	3	47.325
	P- 41	23	5	50.889
	P- 39	24	4	50.955
	P-104	25	6	52.655
	P- 50	26	4	56.354
	P-111	27	6	68.530
	P- 33	28	9	90.120
	P-113	29	10	100.416
GROUP D	P- 92	20	1	20.597
	P-117	21	1	21.988
	P- 81	22	1	22.191
	P-116	23	2	34.196
	P- 99	24	1	36.588
	P- 6	25	3	51.177
	P- 80	26	4	68.598
	P-105	27	3	74.405
	P- 85	28	1	90.302
	P-118	29	5	130.073
	Division II			
	R- 6	10	1	4.001
	R- 2	11	1	6.805
	R-21	12	2	12.484
	R- 3	13	1	24.099
	R- 5	14	4	28.956
	R-18	15	2	33.201
	R-14	16	2	109.475

No August Report: Wrenn Paper Co.; P-83, P-100; P-120.
Report delayed: P-96
Withdrawn: P-115

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LOTOL* gives artificial leather those qualities most sought for . . . unusual *toughness, pliability,* and *moisture resistance.*

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*LOTOL is our trade name for Latex in any form.

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For 90 years Powell Valves have been the choice of engineers — because of design, materials, workmanship — and minimum upkeep! Today Powell Valves are available in gate, globe, angle, cross, check, safety, and Y types — from standard bronze, iron, steel, and corrosion resistant alloys.

FIG. 1444
F. E. RISING STEM
GATE VALVE

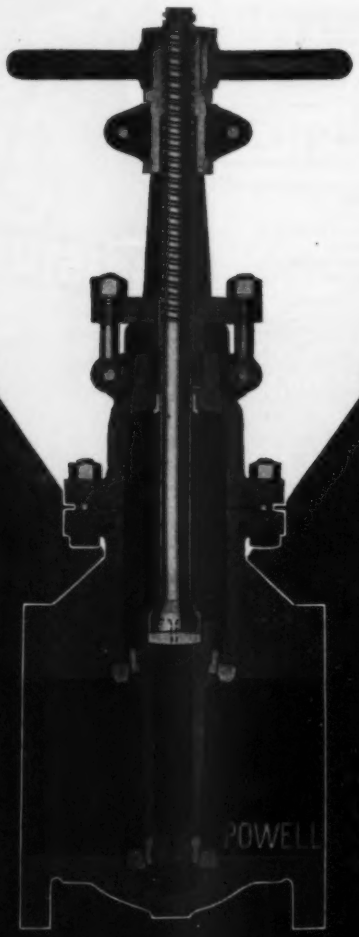

FIG. 1431
F. E. NON-RISING STEM
GATE VALVE

A COMPLETE LINE OF BRONZE, IRON AND STEEL VALVES ARE AVAILABLE FOR YOUR SERVICE.

FIG. 1444 SECTIONAL FLANGED END IRON BODY BRONZE MOUNTED RISING STEM GATE VALVE.

POWELL VALVES

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POWER

GENERATION + UTILIZATION + MAINTENANCE

This section turns the searchlight on power and its allied problems, showing big possibilities to save. Opportunities to improve conditions, methods, apparatus will be discovered. Worth while practices suggest new ideas and wider usages of equipment.

By W. S. JOULE

◆ Shifting Interpole Brushes Changes Voltage

Much sparking and change of voltage may be caused on an interpole generator with a very slight shift of the brushes from the correct neutral point. When the brushes are shifted the interpoles either assist the main series field in raising the voltage as load comes on or buck the series field causing reduced voltage or too small an increase of voltage with the load.

◆ A CEMENT for high-pressure steam joints is made as follows: Mix to a consistency of putty with boiled linseed oil, 10 pounds of litharge, 4 pounds of plaster of Paris, ½ pound yellow ochre, 2 pounds red lead, ½ ounce cut hemp fiber. The hemp should be cut into about ½-in. lengths.

◆ Prevention of Spontaneous Combustion

The spontaneous combustion of the coal is due largely to the oxidation of the fine coal and dust and the confining of the resulting heat; consequently the liability to spontaneous combustion in stored coal is greatly reduced and in many cases eliminated:

(1) If dust and fine coal can be kept out of the pile.

(2) If the coal is of such size and so piled that there is a sufficient air current throughout the pile to carry off the heat due to the oxidation that goes on, so that the coal is not heated at any spot to the ignition point.

(3) If the coal is so closely packed that sufficient air cannot come in contact with the fine coal to cause oxidation.

Clean, screened coal of a uniform size should be chosen, if possible. The larger and more uniform the lumps the better, so as to give an open-textured pile. Coal of one size is, therefore, better than a mixture of sizes. Sized coal should not be stored upon a foundation of fine coal.

The coal should be handled in such a way as to prevent breakage as much as possible. If there is a choice of coals for storage, the least friable should be chosen and the one in which there is the least fine material. Breakage not only produces dust, but the fresh surfaces of coal oxidize more readily than the weathered ones. Coal should not be dropped upon a pile from a height, but the bucket or other receptacle should be lowered to the pile before being dumped.

Coal should be so piled for storage that any part of the pile can be moved promptly if necessary.

Coal should either be so piled that air may circulate freely through it and thus carry off any heat generated in the pile by oxidation, or else it should be so closely packed that air cannot enter the pile; i. e., approximate as nearly as possible under-water conditions. Slack has been successfully placed in storage by rolling it or by running a heavy truck over the pile.

Stratification, or the segregation of the fine and lump coal into layers, should be avoided, since an open stratum of coarse lumps provides a passage for air to reach and oxidize the fine coal, and the stratum of fine coal does not permit the heated air to pass off rapidly enough to keep down the temperature of the pile below the combustion temperature.

Coal should not be dumped at one point at the top of a conical pile, since then the fine coal stays in the center at the top of the pile and the lumps roll to the bottom. Many coal fires start near the top of the pile, where the fine coal has prevented the escape of the heated gases rising through the pile.

◆ RUBBER can be stuck to iron by using orange shellac in the following manner: Swab the surface of the iron with hydrochloric acid and let it stand over night. Then scrape the surface of the rubber thoroughly to remove the "bloom" and coat both iron and rubber with orange shellac. Let them dry. Then coat the iron again with a good coat of shellac, and at once apply the rubber under pressure and let it stand for at least five hours.

◆ Steam May Be Wasted in Soot Blowing

Few operators have any conception as to the steam consumption of soot blowing equipment and the value of correct operation should be impressed on them. It is quite easy to approximate the steam consumption for the soot blowing operation. For instance, with a 100 lb. header pressure, 2.4 lb. of steam will flow through a nozzle if the valve is open 30 sec. while 9.6 lb. will be used if the valve is left open 120 sec.

In other words, a standard 21 tube wide vertically baffled boiler with five units of 20 jets each, or 100 jets, would require 240 lb. of steam in 30 sec. If the blowers were each left on 120 sec., the steam consumption would be 960 lb. Therefore the loss would be 720 lb. or 2,160 lb. every 24 hr. if the boiler were blown three times a day. With the boiler in service 300 days a year this would amount to a total of 648,000 lb. With coal at $5 a ton it costs 31 cents to evaporate 1,000 lb. of water from and at 212 deg. Fahr., assuming an evaporation of 8 lb. of water per lb. of coal. In other words, the fuel cost would be about $200 per year. If the operator is even more careless and with a number of boilers in use, it can be seen that this source of loss may be one that really amounts to something.

◆ AN INERT GAS FILM in contact with any section of the tubes also reduces the ability of hot gases to transfer their heat to the water. To all practical purposes, the actual heating surface of the boiler is reduced by such dead pockets. The practice in baffling has taken this point into account and by narrowing the passage at the point of turn into the next passage, all corners are swept clear by the higher velocity.

◆ Motor Inspection Is Important

Even with apparatus as reliable as the electric motor is today the systematic care and inspection of the equipment is vital to continuity of service. The fundamental point is to prevent trouble or, if it occurs, to remedy it in the shortest possible time.

The chief points on which stress should be laid are that motors must be inspected at least weekly and that every month the armature clearances must be checked up. In addition attention should be given to cleaning, usually at weekly or shorter intervals according to the nature of the work. One place where a closer routine should be carried out is in the care of cranes. The inspection of the cranes should be very thorough and should be followed up by a systematic record of each individual crane and its performance. For the motors in general, a record should be kept of the cleanings and inspections given and of the character of any failures. A master data card for each type, size and design of motor, giving at a glance all the necessary data for rewinding, dimensions and parts and for immediate supply or manufacture of spares is a good plan. A graphic chart showing loss of time from failures is often effective. This may be so devised as to point instantly not only to the general performance but to any particular liability to trouble.

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ACID-PROOF CEMENT
provides EXTRA durability

Neither dilute nor concentrated acids have any effect upon Penchlor Acid-Proof Cement. Whether the acids are hot or cold, this Cement withstands their corrosive action making a lasting, inert mortar for service with any acid except hydrofluoric.

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TECHNICAL DEVELOPMENTS

The following abstracts are of the latest developments found in the foreign press.

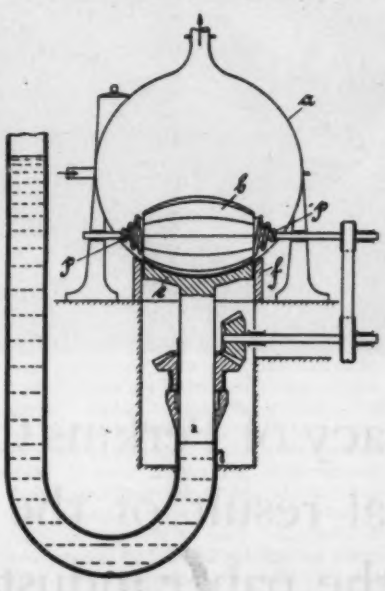
IN THE PAPER INDUSTRY

◆ Composition of Spruce, Scots Pine and Beech

An unusually comprehensive series of chemical analyses, including ash, ether extract, cellulose, furfural, lignin and methoxyl determination on the wood taken from young, intermediate and old trees. These determinations are correlated with the number of annual rings in the wood, with the height of the bole or the position of the limb, and with the direction (North or South) towards which the wood in the tree is facing during growth. Methods of analysis are clearly outlined. They involve little or no new technique. Twenty samples of spruce, and 21 each of pine and beech were analyzed. Omitting data on young trees (10-year-old spruce, 13-year-old pine and 25-year-old beech), the following mean data were obtained: for 60-year-old spruce (wood containing 33-55 annual rings), 0.30 per cent ash (a); 0.72 per cent ether extract (b); 52.04 per cent cellulose (c); 12.69 per cent pentosan (d); and 26.7 per cent lignin (e); for 124-year-old spruce (wood containing 68-112 annual rings), 0.28 per cent (a); 1.50 per cent (b); 52.37 per cent (c); 12.92 per cent (d); 27.11 per cent (e); for 78-year-old scots pine (wood containing 30-75 annual rings) 0.24 per cent (a); 1.57 per cent (b); 51.25 per cent (c); 12.69 per cent (d); 26.60 per cent (e); for 95-year-old pine (wood containing 69-90 annual rings) 0.24 per cent (a); 1.42 per cent (b); 52.0 per cent (c); 12.58 per cent (d); 28.21 per cent (e); for 80-year-old beech (wood containing 24-43 annual rings) 0.41 per cent (a); 0.17 per cent (b); 45.68 per cent (c); 28.95 per cent (d); 22.9 per cent (e); for 110-year-old beech (wood containing 82-105 annual rings) 0.37 per cent (a); 0.13 per cent (b); 47.97 per cent (c); 29.69 per cent (d); 22.75 per cent (e). The cellulose content of the wood of young spruce trees is the highest. In old trees the cellulose is rather evenly distributed at various points of the bole. In the case of pine, the general figures for cellulose are similar to those found in the case of spruce. In certain instances, analytical data were obtained on the wood of branches. In one instance in the case of spruce, and several instances in the case of pine, the cellulose content of these branches was much lower than that of the main bole. Crown wood of the spruce, while a little below the average cellulose content, showed no very marked variations from that of the rest of the bole. This was also true for crown wood taken from pine. Much lower cellulose values for crown wood (43.8 per cent and 43.18 per cent), however, were found in the case of beech. These were by far the lowest obtained from any portion of the tree (including branch wood). Surprisingly high values for furfural (i. e., pentosan) were found in the case of young spruce, and exceedingly high values in the case of spruce branch wood (10.56 to 11.0 per cent furfural). Qualitatively a similar picture is presented by young scots pine wood, and by branch wood. Here the furfural content varied from 8.36 per cent in young boles to 9.74 per cent in branches of older trees. No such variations were found in beech branch wood, and the wood of young beech actually has a lower pentosan content than is the case in older woods.—Carl G. Schwalbe and Willibald Ender: Cellulose-chemie 17, no. 3/4, 36-40; 5/6 54-56 (1936).

◆ Beater

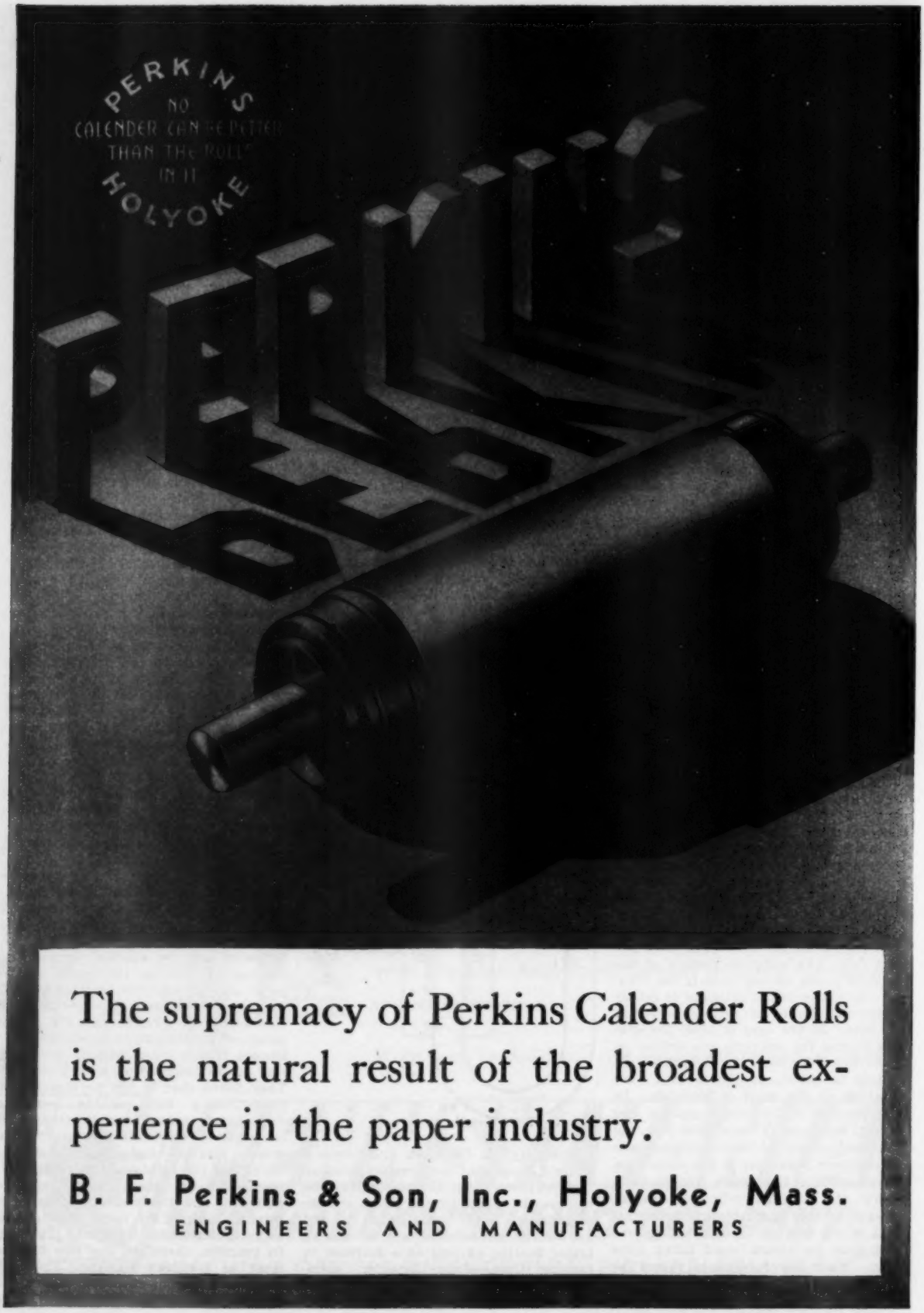
Placed within a spherical trough (a), at the lowest possible position, is the barrel-shaped beater roll (b), which terminates at either end in endless screws (p). The plate (e) is circular, turns in the cylinder (f), and extends into (z) which turns in cylinder (y), and which is operated under pressure. The



cylinder (y) is U-shaped, and forms a water tube so that the pressure causing the bed-plate to be forced against the roll may be caused by gas, steam or compressed air. In the newer claim, (b) and (c) work against each other, causing better beating as well as a decrease in beating time.—Fritz Arledter, Köln-Kalk: German Patents Nos. 627,918 and 629,395.

◆ Recent Work on Sulphite Liquor Tannins

The following are brief abstracts of work by various investigators on tanning materials in sulphite liquor. *C. von der Hoeven* has shown that sulphite liquors may be differentiated from synthetic tannins by the colorimetric determination of methanol, which is split off from lignosulphonic acid by H_2SO_4. *A. Kuntzel*, reporting the experiments of C. Riess and G. Konigsfeld, has indicated that the tanning qualities of sulphite liquor are dependent on the method used in delignification—especially on the base used. The ash content and the ratio of tannins to non-tannins in sulphite liquor extracts (obtained by purification of the crude spent liquor) are largely dependent on the mode of pulping. Evidently the tanning substances, the lignosulphonic acids, which are combined with the basic groups of the skin, form insoluble salts, thus leading to a marked tanning action. The reaction between hide substance and lignosulphonic acid takes place stoichiometrically, as does the reaction between lignosulphonic acid and cinchonine. The cinchonine method is therefore suited for the determination of lignosulphonic acid in sulphite extracts. Since this method is not sensitve to fluctuations in hydrogen-ion concentration and differences in concentration, it is to be commended over the usual methods requiring the use of hide powder. The degree of tanning that can be reached with a given sulphite liquor extract, i. e., the amount of tannin that remains adfixed to the hide (in terms of per cent of hide substance), is largely dependent on the equivalent weight of the lignosulphonic acid. The stoichiometric relation between lignosulphonic acid and hide substance is disturbed by the fact that diffusion may be checked during the tanning process, as the result of the large size of the lignosulphonic acid particles. L. Masner has studied the significance of alkalinity in the preparation of tannin extracts from sulphite liquors. These investigations were carried out in conjunction with V. Samec. They found that in the purification of raw liquors for tanning purposes (which may be achieved in either acid or alkaline solution) the aim is to remove free SO_2 and calcium and iron salts from the solution. Due to prohibitive costs, the use of oxalic acid is excluded, and the removal of calcium sulphate, formed by using H_2SO_4, is a technical barrier to the use of this acid. In practice, therefore, the raw liquors must be rendered alkaline. The neutralization may be effected either in hot or cold solution. When PH values above



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ENGINEERS AND MANUFACTURERS

7 are reached, a much darker solution is obtained when heat is used during purification. Since there is no advantage in the tanning properties of alkaline extracts that have been boiled, this technique is to be discouraged. Rendering sulphite liquor extracts alkaline does not affect their tanning strength materially, unless such extracts are very concentrated. The sugar content of alkaline liquors, however, decreases. Instead of fermentable sugars, non-fermentable substances (which have no tanning value) are formed. By the use of alkaline purification, the content of undesirable mineral constituents of the crude spent liquor is decreased satisfactorily. Free sulphurous acid is removed before the extract is rendered alkaline, otherwise neutralization entails the extravagant use of alkali, and the high salt content leads to difficulties later on. An example is cited of abnormal behavior of a hide in spent sulphite tanning extracts, where the central part of the hide became hornlike during attempted tanning. However, when, during the tanning, neutral salts were removed from the hide by intermittent successive washings, this phenomenon did not appear. The significance of lignosulphonic acid as a tannin has been reported by K. Freudenburg. He cites Hilpert (cf. THE PAPER INDUSTRY, February, (1936) —879-81), who claimed that lignin is not preformed in the wood but is formed during treatment from methylated carbohydrate material. Freudenberg, however, states that under such conditions, phenol-like substances are not formed, and that they are actually present in the wood. This was shown by refractive indices and adsorption spectra of untreated wood samples. The phenolic portion of lignin may be more or less soluble, and may be rendered insoluble by the treatment that it receives during preparation. Spruce wood lignin, when properly isolated, contains no humin substances, and is in its chemical structure essentially the same as that present originally in the wood. This structural similarity holds true as well for lignosulphonic acid. Lignin may be considered the continuous condensation product of guiacylglycin and analogous biochemical building stones. In the chains (of lignin) which may be branched and become tridimensional, benzene, pyrane and furane rings may alternate. In the case of lignosulphonic acid, every third or fourth unit cell contains an SO_3H, which has entered as the result of the rupture of one of the heterocyclic (oxygen-containing) rings. Lignosulphonic acid is not homogeneous. Polymeric homologs are present in admixture. Some of these may reach the molecular weight of ten thousand. The tanning action is due to the presence of the repeated sulphonic acid groups in these macromolecules. However, lignosulphonic acids are to be distinguished from sulphonic acids of benzine hydrocarbons by the presence of aliphatic hydroxyls (statistically about one for every ten atoms) and phenolic hydroxyls (approximately one for every 30-40 atoms). Aromatic sulfonated residues are somewhat hydrophylic. The rapid rate of penetration may be correlated with strong, polar groups. Possibly, also, the smaller molecules penetrate more rapidly than do the larger molecules. Lignosulphonic acid is quite stable and is only very gradually changed by the hide substance. On the other hand, the natural tannis show a tendency towards chemical condensation with the hide. This is also true for liquors containing lignosulphonic acids which have not been freed from the original tannis of the wood.—Angewandte Chemie 48, 668-70 (1935), through Papierfabr. (abstracts) 34, Vol. 10, 50-51 (1936).

◆ Sharper Microscopic Method for Detecting Resin in Pulps

The authors, after testing out a number of Sudan dyes, find that Sudan black B and Sudan black BT color the medullary rays carrying resin with such intensity that they form a sharp contrast to resin free pulp when viewed under the microscope. This is clearly shown in the cut. An alternative method is the

use of indophenol, which gives a deep blue coloration. In the case of lignin (present in unbleached pulps) the full, sharp coloration is retarded and the microscopist must wait an hour before making his observations. With bleached pulps, however, the colorations are exceedingly rapid. Formulas are given for making up dye solutions in 72 per cent alcohol-glycerin solutions, and exact instructions are furnished to the microscopist. Sudan orange RR or Sudan red 5B, but of which yield red shades, may be used in testing for resin where daylight is used in making observations. Indophenol and the Sudan blacks function irrespective of whether artificial light or daylight is used. Analyses of commercial Sudan and indophenol colors (per cent H_2O, ash and qualitative ash components) are included.—August Noll and Max Hahn: Papierfabr. 34, No. 25 (Technical Section), 193-196 (1936).

◆ First Ceramic Pulpstone in Russia

A description of the first experimental artificial pulpstone, together with long time pulping experiments. The stone, which consisted of several segments, was turned out by the Institute of Mineralogical Raw Materials. From these experiments it appears that the surface of the stone suffered from less abrasion than did those of other stones. However, the surface is unevenly worn down. Other experimental ceramic stones are being produced. — Koifmann: Bumaschnaja Promischlennost 14, No. 10, 35 (1935), through Papierfabr. 34, No. 28 (abstracts), 147.

◆ Phytochemical Studies of Paper Mulberry Bark

This is an investigation of Broussonetia papyrifera, which for at least 1000 years past has been used as a papermaking raw material. The study was carried out on bark obtained from Hopeh in Northern China. An examination of the entire bark showed 4.79 per cent ether soluble and 3.88 per cent alcohol soluble matter. The former contained 1.31 per cent wax, 1.35 per cent resin acids, and 1.93 per cent fatty acids. The latter contained 0.06 per cent wax, 0.51 per cent resin acids, and 0.28 per cent fatty acids. (The acids were studied further by proximate analysis.) Other chemical data on the bark in its entirety follow: ash, 6.67 per cent; pentosans, 4.79 per cent; cold water soluble, 12.04 per cent; hot water soluble matter, 17.3 per cent; solubility in 1 per cent NaOH, 48.5 per cent; lignin, 17.35 per cent; cellulose, 36.4 per cent; galactan, 7.07 per cent; pectin, 9.1 per cent; tanning materials, 5.49 per cent; methoxyl groups, 2.99 per cent; protein, 6.32 per cent; cutin, 1.05 per cent; acetyl groups, 0.31 per cent. The ash consisted of 19.2 per cent SiO_2, 11 per cent Al_2O_3, 0.5 per cent Fe_2O_3, 1.8 per cent P_2O_5, 30.9 per cent CaO, 8.4 per cent K_2O, 4.8 per cent Na_2O, 0.1 per cent Cl, 1.8 per cent SO_3, 17.4 per cent CO_2. The entire bark could not be delignified by the sulphite process. Hence the outer bark was removed and the bast fibers were analyzed with the following results: ash, 4.4 per cent; ether extract, 3.37 per cent; hot water soluble, 2.39 per cent; solubility in 1 per cent NaOH, 35.47 per cent; pentosans, 10.42 per cent; lignin, 8.47 per cent; cellulose (shown to have identical unit cells with cotton and wood cellulose), 54.81 per cent; galactan, 4.1 per cent; pectin, 8.84 per cent; protein, 6.13 per cent; tannins, 1.94 per cent; methoxyl groups, 1.69 per cent; acetyl groups, 0.38 per cent; cutin, 0.15 per cent. The bast fiber was separated by allowing the mulberry bark to remain in water for several days, after which the outer bark could be removed by hand. These bast fibers on bleaching yielded the following strength data: at 10 deg. S.R., breaking length 1435 meters, double folds 5132, stretch 5.64 per cent; at 70 deg. S.R. breaking length, 3564, double folds 365, stretch 6.93 per cent. (Values for intermediate degrees of beating are also tabulated.) The bast fibers vary a great deal in length, the minimum being 6.5 mm and the maximum 45.2 mm. The minimum fiber width is .0095 mm, while the maximum is 0.034 mm., The composition of cellulose isolated from bast fibers fol-

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lows: ash, 1.39 per cent; ether extract, 0.22 per cent; pentosans, 0.86 per cent; alpha cellulose, 94.92 per cent; and copper number 0.65. The cellulose was isolated by Kürschner's alcoholic HNO_3 method. (Cf. Zeitschrift Untersuchung Lebensmittel, Vol. 59, 484-94, 1930.)—A. Heiduschka and Yung-Hui Chang; Cellulosechemie 17, No. 7/8, 77-80 (1936).

◆ New Developments in Microscope Technique

Adequate control of paper testing requires microscopic examination of the raw materials and of the stuff in the several stages of manufacture. Since the upper limit of linear enlargement was reached years ago there have been continued improvements in auxiliary equipment, especially in additional types of illumination and above all in photomicrography. Chief of these newer developments are the camera microscopes: MeF of Austria, the British Vickers and the German Neophot, Panphot and Metaphot.

The earlier forms involved mounting microscope, light source and camera upon a horizontal assembly. This took up too much room and was easily disturbed by jars and vibration. Furthermore, the assemblage required special skill and time and often the efforts were frustrated by inexact focus caused by accidental jars. To overcome these difficulties Neophot built an extra heavy horizontal assembly frame with shock absorber mounting. The others adopted vertical mounting. The MeF placed the camera in the base. Panphot set it obliquely in front focused on a mirror. While Panphot retained the conventional microscope form MeF and Metaphot placed the objective beneath the object table. This gave compactness and lessened vibration. For ease of operation the ocular tube was located obliquely in front at convenient height. A binocular attachment may be used where stereoscopic vision is desired. Metaphot has abandoned the revolving nose-piece and substituted an inclined sliding guide (covered by German patent) by which the objective desired can be put in service and centered exactly and securely fixed.

The modern camera-microscope can be used with all the important types of illumination, viz. direct, oblique, transmitted, polarized and fluorescent. As experience has clearly shown, magnification alone does not guarantee a good photomicrograph. It is just as essential to employ the illumination best suited to the peculiarities of the object.

In all phases of paper manufacture microscopic investigation assures time-saving and more positive results as compared with other physical and testing methods. In this connection might be mentioned the manufacture and testing of water-resistant papers. If such were carefully studied microscopically the elaborate tests, viz. water pressure-, funnel-, flotation-tests worked out by the materials testing board (cf. "Papier-Ztg." 1935 No. 70, p. 1232) would become superfluous.

The penetration of color into paper, which is influenced by various factors, can be studied very simply by microscopic observation of cross-sections according to the method of H. Kienast. Several thicknesses of the paper, slightly moistened, are laid upon a glass plate and covered with another one so that the paper extends slightly beyond the covering plate. Then with a razor, or hand microtome, a cut is made along this edge giving sections of the sample.

A singular method of working with combined transmitted and oblique illumination was devised by Prof. Dr. Hauser. By properly adjusted transmitted light the background of the object is so clarified that the contour stands out sharply while the oblique illumination gives a wealth of contrast and renders visible all the minutest details of the surface.

Principally low-voltage incandescent lamps are used as light sources for camera microscopes. Usually the 30-watt (6 volt, 5 amp.) is used, or where more light is needed the 50 watt (6 volt, 8.3 amp.). If photomicrographs are to be taken with large magnification a small arc light is used.

The great majority of microscopic studies in paper manufacture are made with direct light. The most up-to-date arrangement for direct illumination is so designed that the light-source is carried on an arm screwed on to the side of the camera-microscope thus eliminating light-consuming accessories such as reflecting mirrors. Ordinarily the normal clear field vertical illuminator with prism and plane plates is used. For dark field observations a new illuminator (with prism, plates and dark field mirror), the so-called "Universator," is provided. If characteristic surface structures, e.g. fiber arrangement in paper, are to be photographed use is made of the oblique illuminator which screws into an opening underneath the object table.

The newest cameras are suitable for taking pictures 6½x9; 9x12; 13x18 cm. The optic is so designed that the image appears just as sharply defined on the plate as when seen through the eyepiece. For photographing in the "MeF" instrument the ocular tube must be drawn out full length in order to give a free path for the rays to the plate. In the "Metaphot" the object can be observed and photographed at the same time.

These new camera-microscopes are well adapted for taking photomicrographs with small magnifications, as low as 3 X. By the use of a simple attachment sketching may also be done easily. Both these arrangements are particularly valuable for teaching or for assembling the results of a series of experiments. The camera-microscope in its newer form is a far better aid to process control than the ordinary microscope. It saves time, reduces eye-strain, and provides permanent records. The original article contains eight illustrations.

By A. Karsten. "Wochenblatt für Papierfabrikation" May 9, 1936, p. 355.

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Inquiries with reference to any of these patents should be addressed to James Atkins, Munsey Building, Washington, D. C.

Compiled by James Atkins, Registered Patent Attorney

2,044,480—Grinding Machine for Paper Pulp. Frank Lord, Radcliffe, England. Application September 7, 1935. Serial No. 39,509. In Great Britain November 29, 1934. 2 Claims. (Cl. 92—26.) In a paper pulp grinding machine having superposed rotary grinding discs provided in a stationary casing, disc-like walls which together with the guide vanes provided on the stationary casing form inwardly extending passages for the pulp the said disc-like walls co-operating with outwardly acting propeller vanes provided on the upper sides of the rotary discs to prevent entrance of the pulp to and lodgment of pulp on the upper surfaces of the rotary discs.

2,044,987—Paper Machinery. Herbert A. Kidd, Chillicothe, Ohio, assignor to The Mead Corporation, Chillicothe, Ohio, a corporation of Ohio. Application February 1, 1934. Serial No. 709,340. 10 Claims. (Cl. 154—30). In a paper corrugating machine having rotatable means for corrugating a web of fibrous material supplied thereto, a web feeding roll for supplying the web to the rotatable corrugating means and adapted for frictional driving engagement with the web, and drive means for operating said roll at a peripheral speed in excess of the speed of the web required by the corrugating means.

2,045,046 — Paper Cutting Machine. Garrett W. Mudd, Chicago, Ill., assignor to Peters Machinery Co., Chicago, Ill., a corporation of Illinois. Application May 31, 1934. Serial No. 728,369. 5 Claims. (Cl. 164—49). In a paper cutting machine, a reciprocating cutter, means embodying feed rolls for feeding the material into a position to be cut by the cutter, and means operating automatically to temporarily arrest the movement of the feed rolls while the cutter is severing the material, the last recited means embodying a clutch device comprising two co-operating members, one of said members comprising separate elements connected for movement together and also for movement one with respect to the other for providing a lost motion between the said elements.

2,045,052—Paper Manufacture. Harold Robert Rafton, Andover, Mass., assignor to Raffold Process Corporation, a corporation of Massachusetts. Application May 5, 1932. Serial No. 609,555. 32 Claims. (Cl. 91—68). The method of manufacturing sized paper filled with alkaline filler comprising preparing a fibrous web containing alkaline filler, applying to said web substantially water insoluble sizing agent dissolved in a solvent therefor, said sizing agent in such solution being characterized by being capable of distributing itself in said web to impart a substantially uniform sizing effect thereto at a temperature at which no substantial fluxing of said sizing agent occurs, said sizing agent in such solution being further characterized by being substantially unreacted upon by alkali, and evaporating substantially completely the liquid content of said web, but without bringing about any substantial fluxing of said sizing agent in said web, said sizing agent applied to said web being sufficient in amount to impart sizing effect to said paper.

2,045,095—Process of Making Porous Long Fibered Nonhydrated Paper. Fay H. Osborne, Windsor Locks, Conn., assignor to C. H. Dexter & Sons, Incorporated, Windsor Locks, Conn., a corporation of Connecticut. Application July 21, 1934. Serial No. 736,302. Renewed January 28, 1935. 19 Claims. (Cl. 92—14). In the process of manufacturing paper having the characteristics described, digesting stock having long fibers devoid of twisting tendencies to an extent where the fibers may be subsequently separated without pressure, separating the digested fibers without mechanical pressure or hydration, suspending the fibers in an extremely large proportion of water, and depositing the fibers on a traveling meshed sheet-forming screen while permitting the water to flow rapidly and freely through the screen.

2,045,096—Porous Long Fibered Nonhydrated Paper. Fay H. Osborne, Windsor Locks, Conn., assignor to C. H. Dexter & Sons, Incorporated, Windsor Locks, Conn., a corporation of Connecticut. Application November 22, 1934. Serial No. 754,307. 8 Claims. (Cl. 92—3). A porous, long fibered paper consisting of uncrushed, cylindrical, soft, nonhydrated fibers of substantially uniform length uniformly distributed to leave substantially uniformly spaced openings throughout the area of the paper.

2,045,818—Method of and Apparatus for Producing Paper Pulp. Frederick W. Adams, Stoneham, Mass., and George S. Witham, Jr., Lincoln, N. H. Application June 26, 1934. Serial No. 732,456. 8 Claims. (Cl. 92—7). The combination with a pulp digester, a blow-off line leading therefrom and a blow-off valve in said line, of means for mixing a sufficient quantity of a suitable liquid with the charge of stock and waste liquor while the stock is flowing through said line to prevent any substantial explosion of the fiber as the latter is discharged from said line.

2,045,852—Wrapper and Method of Making. Ralph A. Hayward, Parchment, Mich., assignor to Kalamazoo Vegetable Parchment Company, Parchment, Mich. Application April 22, 1936. Serial No. 75,833. 7 Claims. (Cl. 91—67.9). The method of making waxed paper suitable for use as food wrappers which comprises coating one side of a smooth surfaced paper suitable for printing by a printing operation with a background coating consisting of an adhesive vehicle mixed with a body pigment, glycerine, and a colored pigment and having a water content ranging from 35% to 45% insufficient to cause expansion and wrinkling of the paper, drying and passing directly from the coating means to a drying means, printing on the coated surface with an oil base ink, and passing the printed paper through a bath of wax.

2,046,270 — Two-Stage Gravity Flow Wet End Paper Making Machine. Gerould T. Lane and Wendell Butterfield, Rochester, N. Y., assignors to Eastman Kodak Company, Rochester, N. Y., a corporation of New York. Application November 25, 1933. Serial No. 699,776. 10 Claims. (Cl. 92—43). In a paper making machine, the combination with a head box adapted to contain a supply of stuff, of a flow box in which a foraminous cylinder is mounted, a making wire passing around said cylinder, means for controlling the water level in the cylinder, and means including the head box for maintaining the level of the stuff in the flow box at such a level that stock is flowed over the cylinder and making wire as it leaves the cylinder whereby washing off of the fibers deposited on the making wire is prevented.

2,046,271—Controlled Leak for Paper Making Machines. Gerould T. Lane and Wendell Butterfield, Rochester, N. Y., assignors to Eastman Kodak Company, Rochester, N. Y., a corporation of New York. Application October 26, 1935. Serial No. 46,954. 12 Claims. (Cl. 92—43). In a paper making machine, the combination with a stuff box, of a cylinder mounted therein, a making wire passing around the cylinder and means for controlling the flow of stuff in the stuff box relatively to the making wire including a dam spaced from the making wire, said dam including means for drawing off stuff leaking between the dam and the wire.

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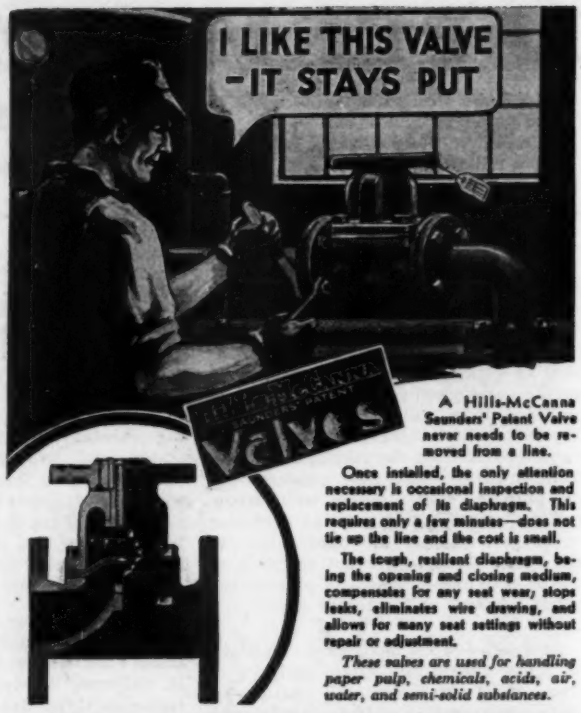

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The COMMERCIAL OUTLOOK

New York, October 1, 1936.

SURGING ahead at a good pace, the paper industry is developing increased activity in practically all its divisions, gaining momentum as the Summer passes and the busier Fall season gets under way. All reports, substantiated by statistics relating to production, shipments, etc., add to the very gratifying picture provided by the situation existing in the industry. Paper and board mills the country over, or wherever such plants are situated, are actively engaged; some are operating at close to full capacity, and nearly all are working on far better schedules than in a lengthy while—certainly at any time since prior to the depression period.

Moreover, sentiment within the industry is of the best; there is a feeling of profound confidence concerning the outlook—the immediate as well as the farther away future. Paper manufacturers view the marked expansion of demand for paper and paper products as entirely healthy, being founded on corresponding improvement in general industry and trade, with the increased amounts of paper produced and shipped moving almost directly into consumption. Nor does there seem any plausible reason to believe that the broad activity developed by the market will not continue for some while to come.

As an impressive indication of the very busy state of the industry, it might be mentioned that the latest available figures show that paperboard mills of the country operated at 81 per cent of their rated capacity on an "inch-hours" basis during the week ended September 19, which represents the highest scale of manufacturing operation attained by this group of mills in years, or at any rate since the National Paperboard Association commenced to compile and issue statistics on the subject.

"Uniformity of gains, which were disturbed little by the usual seasonal influences during the Summer, extended improvement in the paper industry during the first eight months of 1936," says a survey of the industry just completed by a widely known statistical agency. "Increases in production from the corresponding 1935 tonnage ranged from 10 per cent to as high as 25 per cent, and some divisions were only a small percentage under the 1929 peak for the period. For wholesale distribution the average was 12 to 18 per cent higher, the largest volume recorded since 1930, as buying was active all Summer, and Fall orders were placed nearly a month earlier than last year. Due largely to the rise since March, production of paper for the first eight months of 1936 went from 10 to 15 per cent in tonnage and 15 to 18 per cent in dollar volume over the comparative 1935 figures. For July and August, some wholesalers reported increases up to 25 to 35 per cent in the movement of paper supplies, although these usually are quiet months. Buying was at a good rate all during the Summer, and in most branches of the trade the customary seasonal recession was entirely absent."

Canadian mills in August produced slightly less newsprint than they manufactured in July this year, but more than they ever made in any preceding August in the history of the industry. United States mills continued to lag, however, showing a slight decrease from a year ago. Canadian output gained 14.6 per cent for the month over last year, United States production declined 2 per cent, and the gain for both countries was 10.6 per cent, according to figures reported by the News Print Service Bureau. With United States mills turning out only about 60 per cent of their production in 1929, the total for the month and for the first eight months of this year ran behind the totals for 1929, although exceeding those for any other period.

Canadian mills produced 270,053 tons of newsprint in August, compared with 235,573 tons in the same month last year, and 225,873 tons in 1929, the year which set the record for production. United States mills in August made 73,673 tons, contrasted with 75,187 tons in the similar 1935 month and 120,868 tons in August, 1929. Mills in both countries produced 343,726 tons in August, against 310,760 tons last year and 346,741 tons in August of 1929. Canadian newsprint output for the first eight months of the current year set a new high of 2,033,943 tons, whereas United States production for the period was only 607,173 tons, against the record of 1,123,658 tons in the first eight months of 1926. The total for the two countries during the first eight months of 1936 reached 2,641,116 tons, compared with the all time high of 2,696,385 tons in the first eight months of 1929.

Newsprint shipments from United States and Canadian mills during August last ran 6,609 tons ahead of current production, so that stocks at the end of August of 87,258 tons compared with 97,867 tons a month previously, and 93,564 tons at the end of August, 1935.

Output of paperboard in the United States showed an increase during July over the preceding month, reaching a total of 299,033 tons as compared with 288,682 tons in June, according to the monthly summary of the U. S. Census Bureau. Compared with a year ago, the July production was sharply higher than the 260,207 tons in the same 1935 month. Board production in the first seven months of this year aggregated 1,999,463 tons, comparing with 1,829,852 tons in the corresponding period last year and 1,642,282 tons in the first seven months of 1934. Board mills produced at an average of 69.1 per cent of their rated capacity during the first seven months of this year, against 65.1 per cent a year ago and 59.8 per cent two years ago. New orders received by mills in July last called for a total of 304,747 tons of board, contrasted with 290,098 tons in the month before and 259,486 tons in the same 1935 month, while unfilled orders held by manufacturers at the end of July were for 101,557 tons, against 96,408 tons a month preceding and 78,241 tons on the same date a year before.

Shipments of prepared roofing from mills in the United States, 23 manufacturers having 48 plants reporting to the U. S. Census Bureau, amounted to 2,508,716 squares in July, registering an increase over the 2,329,524 squares shipped in the preceding month, and a larger gain over the 2,258,726 squares shipped in the similar month last year. The July shipments brought the total for the first seven months of 1936 up to 16,943,763 squares, against 14,220,655 squares in the same period of 1935, and 12,743,168 squares in the first seven months of 1934.

◆ ◆

◆ Bartlett C. Dickinson

Bartlett C. Dickinson, former president of the Standard Paper Company, Kalamazoo, Mich., passed away suddenly from an accident September 24. He was 60 years of age. Mr. Barletlett had been in poor health for some time but his passing was the result of a bullet wound, which it has been reported may have been self-inflicted.

Mr. Dickinson was for many years prominently associated with the papermaking industry in Kalamazoo. He was president of the Standard Paper Company when it was acquired by the Sutherland Company a few years ago. He also was treasurer of the Sutherland Company.

◆ Pump Shafting

On centrifugal pumps, the portion of the pump shaft in contact with the packing sometimes wears away rapidly. At one large paper mill, it was necessary to tighten this packing gland about four times a day. The gland also had to be repacked about twice a week. The bearing surface of one of the shafts was hard-faced with an alloy of cobalt, chromium and tungsten and ground to dimensions. At the end of three months, it showed no appreciable wear. During this time the packing gland was tightened only occasionally, and it has not yet required repacking.

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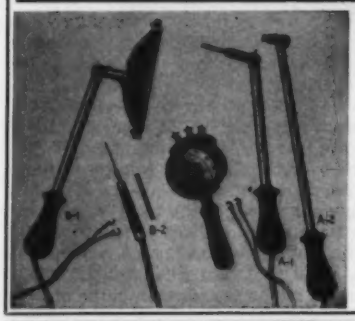

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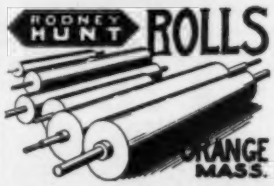

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Identification and Microscopy of Woods and Wood Fibers Used in the Manufacture of Pulp, by Ellwood S. Harrar and J. Elton Lodewick. A condensed manual on wood identification that not only discusses various softwoods and hardwoods used in the making of woodpulp but also includes several keys to their identification.

Lessons in Paper Making (Part 1 and Part 2), by Harry Williamson. Part 1 discusses such subjects as running a winder, dryer felts, wrinkles and rips, presses, wet felts and their handling, suspension of fiber-slice velocity, head boxes and control, aprons and shake control, variables and the wire. Part 2 takes up the operation of the wire, sewing the wire, building the reel, structural formation of paper, the superstructure of paper, beater room preparation, vacuum-atmospheric pressure, distribution of atmospheric pressure-suction boxes, theory of color and safety practice in machine room. *(Issued as two separate publications.)*

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Domestic RAW MATERIALS

◆ Papermaking Rags

Dealers and importers continue to lay much stress on the tightness of the supply situation in most grades of papermaking rags, domestic and foreign, and the increasing difficulty encountered in making purchases at sources of supply, whereas paper manufacturers continue to buy in very reserved volume while apparently having their present needs provided for. In the face of this somewhat deadlocked situation, prices of some classes of rags are mounting, slowly to be sure but nevertheless surely. There is a firm undertone to the market, which would seem to bear out the contention of dealers that a decidedly strong supply position exists, particularly when the restricted purchasing by consuming mills is given due consideration.

Perhaps the firmest group of rags is roofing stock. European exporters are said to be ignoring bids from the United States below certain minimum levels; indications are they have a ready market nearby for all the roofing rags they have to sell and evidently at more favorable values than they can secure from America, and it can be said that no large amounts of such rags have come across the Atlantic in recent months. Prices of domestic roofing also are stiffening gradually, although still remaining far under a parity with imported material of corresponding grade and notwithstanding cautious buying by roofing felt manufacturers.

Foreign dark cottons have been sold to mills here at 1.90 cents a pound ex dock New York or other American Atlantic ports, and there have been unconfirmed reports of 2 cents having been paid, while linsey garments have realized 2.20 cents ex dock basis. There appears every reason to believe that few additional foreign rags are to be had at these prices, importers asserting that they themselves have to pay as much when purchasing abroad. Domestic roofing is selling in the East at 1.70 cents a pound for satinet garments, 1.60 cents for cloth strippings and 1.35 to 1.40 cents for mixed satinets f.o.b. points of shipment.

Writing paper mills are absorbing rag supplies in a more or less consistent way as their requirements arise, but are ordering in reserved volume and are creating little or no excitement in the market. Price levels are well maintained, but are registering no important changes. Several grades of new cuttings stand out in demand. No. 1 white shirt cuttings are moving freely and dealers ask 7.75 to 8 cents per pound f.o.b. shipping points, while 7 cents or higher is wanted for new blue overall cuttings, 6 cents for light silesias, 6.25 cents for light flannelettes, 8 cents for new white canvas cuttings, 8 cents for soft unbleached muslins, and 7.25 cents for bleached and 6.75 cents for unbleached canton flannels. Fancy shirt cuttings are quoted at 3 cents or close to that figure, and No. 1 washables at 2.50 to 2.75 cents at shipping points.

Old white cottons and blue cottons are in some routine call, and quoted rates are unaltered. Dealers usually ask 3.50 cents or higher, depending on the quality of packing, for No. 1 repacked whites at shipping points, 3 to 3.25 cents for No. 1 miscellaneous whites, and 2 cents for repacked thirds and blues.

◆ Old Paper

The western market for old paper rules steady, and prices of some grades in the East have moved upward slightly. The market is firm and active. There is a persistent demand of broad scope, especially from board mills, with reports stating that practically all the supply reaching the market is finding a ready sales outlet.

No. 1 old mixed paper is bringing 35 cents per hundred pounds f.o.b. shipping points in the East, and folded newspapers up to 47½ cents, while old corrugated boxes readily fetch 47½ to 52½ cents a hundred pounds, heavy books and magazines 57½ cents per hundred, No. 1 old kraft paper 1.10 to 1.20 cents a pound, white blank news cuttings 1.25 cents, white ledgers 1.10 to 1.20 cents, No. 1 soft white shavings 2 cents and one-cut quality 2.35 cents, No. 1 hard white shavings 2.15 to 2.35 cents, according to quality, and No. 1 hard white envelope cuttings 2.50 cents.

◆ Rope and Bagging

Old rope prices have advanced. The market is approximately half a cent per pound up from a month ago. Domestic No. 1 old manila is selling at 2.75 cents per pound f.o.b. shipping points, reports stating that some of the largest consuming mills are freely granting this price. Foreign old rope is quoted at 2.65 to 2.75 cents ex dock New York, and doubtless has brought these prices, if not higher in some instances. Dealers assert it is becoming more difficult to locate round lots of old rope at supply sources. Strings are firm and in good demand. Sisal strings are bringing 1.25 cents, and soft jute strings 1.40 cents a pound at shipping points.

Bagging is tending upward in value, and the strength in prices is in good part due to the stiff demands of shippers abroad for almost all kinds of jute stock. Importers declare they have to pay at least 2 cents per pound for gunny bagging for shipment from abroad landed at U. S. ports, and that No. 1 scrap burlap costs fairly near to this level. Domestic gunny is quoted to consumers at 1.90 cents or more at shipping points, and No. 1 domestic scrap bagging at 1.80 cents.

◆ Pulpwood

Demand for pulpwood is on a consistent basis, and the market has a steady tone although reports say that some consumers have contracted for next year's supplies at slight reductions in price. The outlook is regarded as favorable, since it is expected consumption will record a considerable increase, due to the general expansion of demand for pulp.

◆ Mechanical Pulp

Prices of mechanical wood pulp have stiffened to some extent, having scored a rise of a dollar or thereabouts per ton. The market situation is considered most healthy, the strengthening of pulp values being caused by a demand and supply condition which apparently has put buyers on the defensive. Offerings from abroad are restricted, both from Canada and Scandinavia, where producing mills appear to be well sold, and domestic manufacturers seem to have little groundwood to divert to the open market. Domestic groundwood of prime quality is quoted on a range of $27 to $31 per short ton delivered consuming points, depending on the haul from producing mills. Canadian groundwood is $23.50 a ton ex dock New York for pulp brought down from the Dominion by boat, and Scandinavian dry groundwood is $26 to $27 per short ton ex dock American Atlantic seaboard.

◆ Chemical Pulp

Domestic pulp mills, in company with producers in Europe and Canada, are well sold up for some time to come, and are exerting little or no effort to effect further sales. As a matter of fact, buyers appear more eager to acquire pulp than are sellers for additional orders. Producing mills are operating on an active scale, and pulp is moving forward against contracts and back commitments in a steady way and in sizeable tonnage. Prices are exceedingly firm, but no further definite quotable changes have been registered. It is stated that producers are accepting orders for first quarter of 1937 shipment bleached sulphite at the same basis as now prevails or 2.65 cents per pound ex dock American Atlantic seaboard. Unbleached sulphite is 1.80 to 1.90 cents for domestic newsprint qualities and from 1.95 cents upwards for higher grades. Bleached soda pulp is 2.60 cents delivered paper mills, and domestic kraft pulp 1.90 to 2 cents as about a minimum to substantially higher for some eastern or northern kraft pulps, at points of shipment.

◆ Chemicals

Prices of papermaking chemicals are firm as the contracting season draws near. Casein is quoted at 17.50 to 18 cents per pound for domestic and 17 to 17.50 cents for the imported product. Bleaching powder is 2 to 2.25 cents a pound in drums at works. Caustic soda is 2.50 to 2.60 cents for the solid, f.o.b. works, and soda ash 1.20 cents for bag shipments.

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IMPORTS

◆ Wood Pulp

It's been many a day, if ever before, that the wood pulp industry has witnessed a supply situation such as now exists. On numerous occasions in the past there have been alarmists giving warning that a shortage of pulp of this or that class might ensue, and it has been something of a habit among pulp importers and agents in this country to preach possible lapses of supply.

Now, it would seem, all the doleful pictures painted by eager sellers in other years have been rolled into a single supply position which, as regards some kinds of wood pulp, has developed as a distinct surprise to producers and distributors themselves, and has pulp consumers in something of a quandary. It is not going too far to state that a serious shortage of kraft pulp, and also bleached sulphite, is an absolute fact. Producing mills in this country and abroad—in Sweden, Finland, Canada and elsewhere—are sold out, and with very few exceptions, not only for the remainder of the current year but for at least the first half of 1937, and in many cases for all of next year.

There is almost a scramble among consuming buyers for kraft pulp. The immediate need does not appear to be urgent, since a large majority of paper and board mills have their requirements supplied for the present and for a while ahead, but there is pronounced eagerness shown to cover farther into the future and it is here where the rub comes. Pulp importers and agents at New York assert they are in receipt of all manner of offers of orders; that they are hearing from buyers whom they have not been in contact with for a long time, indicating that consumers are looking all about the trade for available kraft supplies, and that it is becoming more and more difficult to get any kraft pulp at all at producing sources for delivery up to the end of 1937. Almost as tight a supply condition marks bleached sulphite.

Kraft pulp of prime quality is reported commanding 2.15 to 2.25 cents per pound ex dock American Atlantic seaboard for any lots that can be delivered at any time in the near future, and firm bids at these prices are in a large majority of cases going unheeded by sellers because they haven't kraft pulp to dispose of. The nominal basis on prime kraft for next year's shipment from abroad is 2 to 2.10 cents a pound. Prime bleached sulphite is 2.75 cents per pound upwards ex dock Atlantic seaboard, with spot lots frequently bringing premiums, and with producers of extra quality sulphite quoting 3 to 3.25 cents. Prime strong unbleached sulphite is 1.95 to 2.05 cents a pound at U. S. Atlantic ports, and is also fairly well outsold, especially the strong pulps that have fetched 1.95 to 2 cents per pound. Easy bleaching sulphite is 2.05 to 2.15 cents, and is reported increasing in demand as so many more consumers are bleaching their pulp.

Importations of wood pulp into the United States remained on a high level in July last, although falling below the exceptionally heavy arrivals during the month preceding. Chemical pulp imports amounted to 185,218 net tons of 2,000 pounds, air dry weight, in July, valued at $7,039,547, according to U. S. Department of Commerce figures, comparing with 209,965 short tons of a declared value of $7,892,774 in June this year, and 135,112 short tons of a value of $5,179,470 in July last year. The July imports were larger than in any previous month this year excepting January and June.

Groundwood imports in July were 22,882 short tons of a value of $404,865, bringing the aggregate for the first seven months of 1936 up to 116,199 short tons, contrasted with 90,084 tons in the similar time last year. Foreign groundwood quotations are firm, and slightly higher at $26 to $27 per short ton for dry prime, and about a dollar less for moist groundwood ex dock American Atlantic seaboard.

◆ Paper Stock

Imports of rags for papermaking into the United States in June amounted to 27,014,602 pounds, valued at $457,213, comparing with 33,010,387 pounds of a declared value of $581,839 in the preceding month, and bringing the total during the first half of the current year up to 157,782,864 pounds of a value of $2,487,375, or not quite double the 79,648,147 pounds of a value of $845,219 imported in the corresponding six months of 1935, according to U. S. Department of Commerce figures. Other paper stock imports in June last, comprising old rope, old bagging, waste paper, etc., were 8,989,695 pounds of a value of $169,930, making a total for six months this year of 58,202,833 pounds of a value of $961,132, contrasted with 36,816,841 pounds of a value of $520,426 in the first half of last year.

◆ Paper

Importations of paper and paper products into the United States this year are keeping pace with the increase registered in most other commodities. During the first six months of 1936, the total imports reached a value of $50,663,633 and including receipts of a value of $9,901,768 in the month of June, showing an appreciable gain over the imports valued at $43,283,178 in the initial half of 1935, U. S. Commerce Department statistics divulge. Standard newsprint accounted for the great bulk of these imports, receipts of this class of paper being valued at $44,317,584 during the first half of this year, and $38,083,480 in the same 1935 period.

EXPORTS

Exports of paper and paper products from the United States in July last were valued at $2,009,039, an increase of 11 per cent over the July, 1935, shipments, according to preliminary figures released by the U. S. Department of Commerce. A majority of the products classified under this schedule contributed to the rise in this year's exports, but it is doubtful if the aggregate volume of shipments much exceeded those recorded for the corresponding month last year. A number of the larger items, such as newsprint, book paper, overissue newspapers, boards of all classes except insulating and wallboards, and paper boxes and cartons, show a substantial decrease. These losses were offset to some extent by increases registered in shipments of writing and surface coated papers, paper bags, and a number of items of secondary importance from the standpoint of volume. On the whole, exports of better grade papers and converted paper products appear to be in a better position than they were twelve months previous, while exports of the coarser papers and boards have fallen off.

Exports of paper base stocks during July attained a value nearly three times the amount recorded for July, 1935. As usual, sulphite wood pulp accounted for the greater portion of this amount. July exports of this material comprised 13,535 tons of bleached and 8,495 tons of unbleached sulphite pulp, with an aggregate value of $1,178,688, against 5,971 tons of sulphite pulp of a value of $351,364 during July, 1935. Next in importance to sulphite pulp were papermaking rags, exports of which were valued at $62,701 in July last, and other waste for paper manufacture valued at $44,242. The remainder consisted of a small amount of pulpwood and wood pulp. Exports of all paper base stocks during July reached a total figure of $1,322,909, as compared with $469,944 in July last year, and made a total for the first seven months of the current year of $6,784,622.

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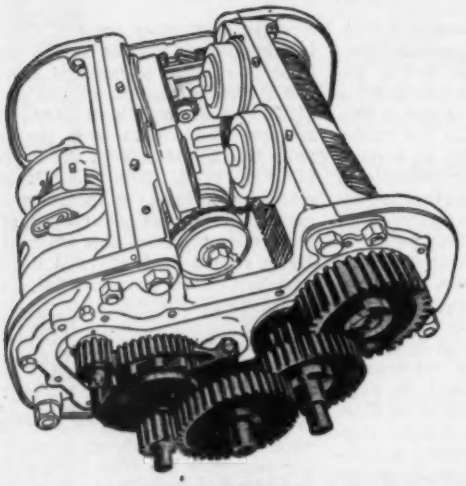

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